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MICHIPICOTEN SITE*

BY J. V. WRIGHT

RÉSUMÉ

Le gisement archéologique stratifié de Michipicoten, sur la rive nord du lac Supérieur, contient neuf composantes bien distinctes qui vont de la période historique jusqu'au XII^e siècle de notre ère. Les preuves ethnohistoriques nous font croire que les composantes historiques appartiennent aux Ojibwas, et la manière directe d'aborder l'histoire nous permet de croire que les composantes préhistoriques sont une accumulation d'objets qui ont appartenu au même peuple. La céramique de toutes les composantes représente un mélange de diverses traditions et démontre une influence provenant du sud et du sud-est, mais non de l'ouest. Cependant, la céramique de l'époque Huron-Pétun en provenance du sud-est n'apparaît dans le gisement archéologique qu'à partir du milieu du XV^e siècle. Alors que l'assemblage de pierre est en grande partie indigène, on pense que la céramique offre un caractère d'emprunt. L'occupation relativement ininterrompue du gisement archéologique de Michipicoten pendant environ 700 ans jette une vive lumière sur le problème de l'expansion de la culture ojibwa sur la rive nord de la partie supérieure des Grands Lacs.

SUMMARY

The stratified Michipicoten site on the north shore of Lake Superior contains nine discernible components ranging in time from the historic period to A.D. 1100. Ethnohistoric evidence suggests that the historic components may be attributed to the Ojibwa, and the direct historical approach suggests that the prehistoric components are the cumulative product of the same people. Ceramics from all components represent a mixture of different ceramic traditions and indicate that influences were being received from the south and southeast but not from the west. Huron-Petun ceramics from the southeast, however, do not appear on the site until the mid-15th century. It is proposed that the ceramics represent borrowed traits, whereas the stone assemblage is, for the most part, indigenous. The relatively unbroken occupation of the Michipicoten site for approximately 700 years throws considerable light on problems of Ojibwa culture development along the north shores of the Upper Great Lakes.

*Submitted February 23, 1966.

Introduction

The Michipicoten site, or Cliff-1 as it is designated under the Borden system of site designation (Borden 1952), is located on the south bank of the Michipicoten River near its embouchure into Lake Superior (Figures 1 and 2). At this point on the river the current is gentle, although the Michipicoten generally possesses a strong current and, indeed, a swift occurs directly where the river empties into the lake through a narrow neck. High sand banks are present along both sides of the river except where the granite bedrock of the surrounding highlands intrudes to the river's edge. Although the forest region is classified as Great Lakes - St. Lawrence, its location on the eastern flank of the Boreal Forest is quite apparent from the prevalence of black spruce and white birch (*Atlas of Canada*, Plate No. 39, 1957). Forest cover at the site consisted of a heavy stand of black spruce, which dictated, to a substantial degree, the location of the excavation units. The area between the western edge of the site and the lake had been subjected to extensive wind erosion with the result that the series of elevated beaches, which extend for some distance to the south along the lake shore, had been partly obliterated. In contrast to this situation the area to the east of the site and along the river is characterized by a relatively flat plateau which varies from four to five feet above the river. The contrasting physiography definitely appears to be the product of two agents of deposition—aeolian to the west and fluvial to the east. The two forms of deposition meet and blend at the site, thereby greatly complicating the problem of interpreting the stratigraphic situation. The resultant complication is compounded by the apparently continuous occupation extending back to the beginning of the 12th century.

In 1897 Dr. Robert Bell of the Geological Survey of Canada obtained from the Michipicoten site a collection which now resides in the National Museum of Canada. In 1955 Mr. Frank Ridley examined the site and published the results of his excavations (Ridley 1961). During the 1960 field season my assistant and I surveyed the Michipicoten River downstream for approximately forty miles and camped at the mouth for three days. The results of a test excavation made on the site at this time warranted our return to the site in 1961 with a larger crew.

EXCAVATION

The excavation technique used at the Michipicoten site was oriented toward the maximum control of the obviously complex stratigraphic situation. Excavation units were restricted to five-foot squares with the exceptions of one ten-foot square, the bank cut, and also the ten-foot by four-foot trench excavated in 1960. All the excavation units are illustrated on Figure 3 except the bank cut, which is situated to the west. A total of 33 five-foot squares were excavated, which, in conjunction with the other units, totalled nearly one thousand square feet. Squares were excavated alternately to

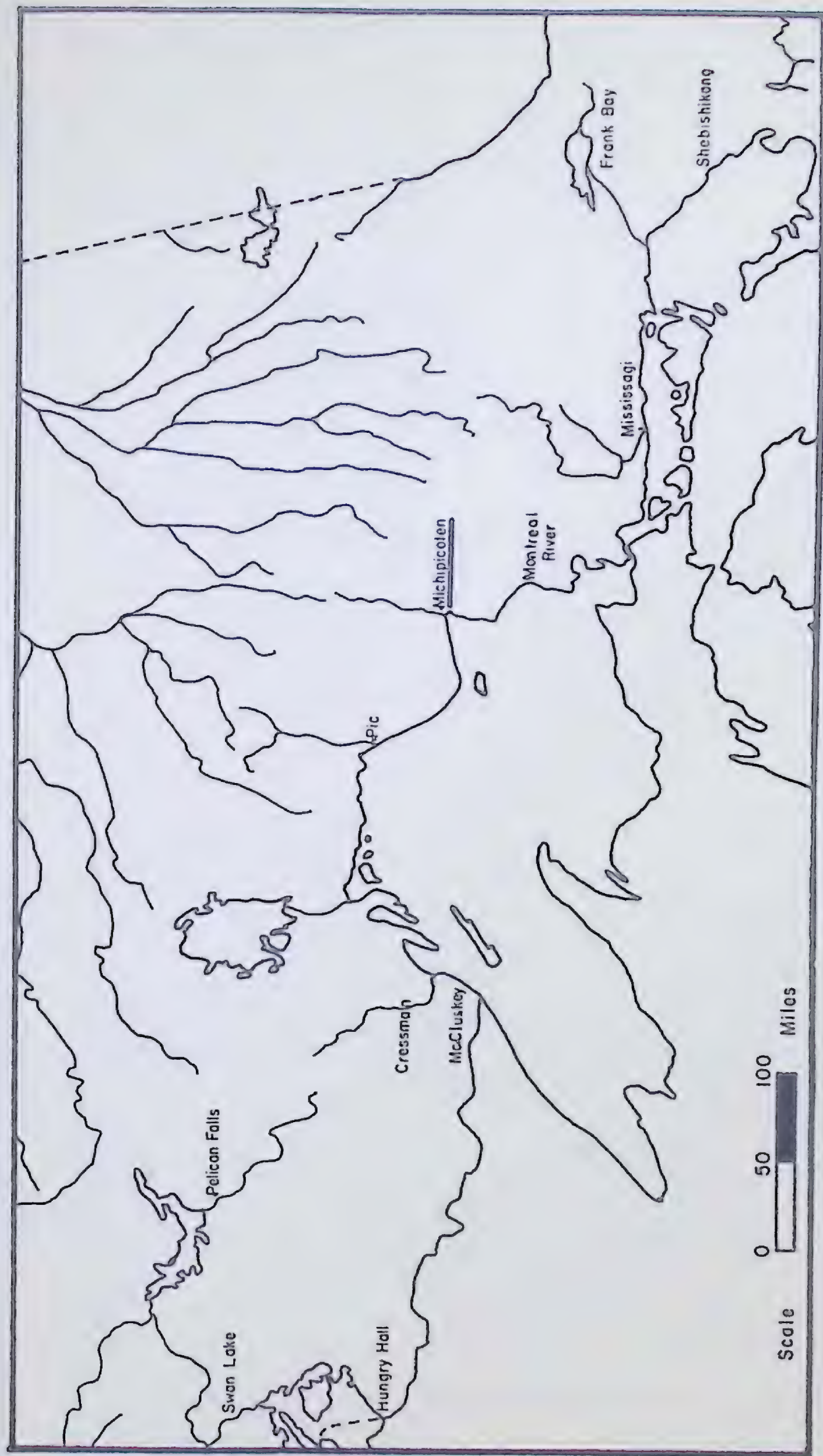


FIGURE 1—Location of contemporaneous Late Woodland sites along the north shore of the Upper Great Lakes and west

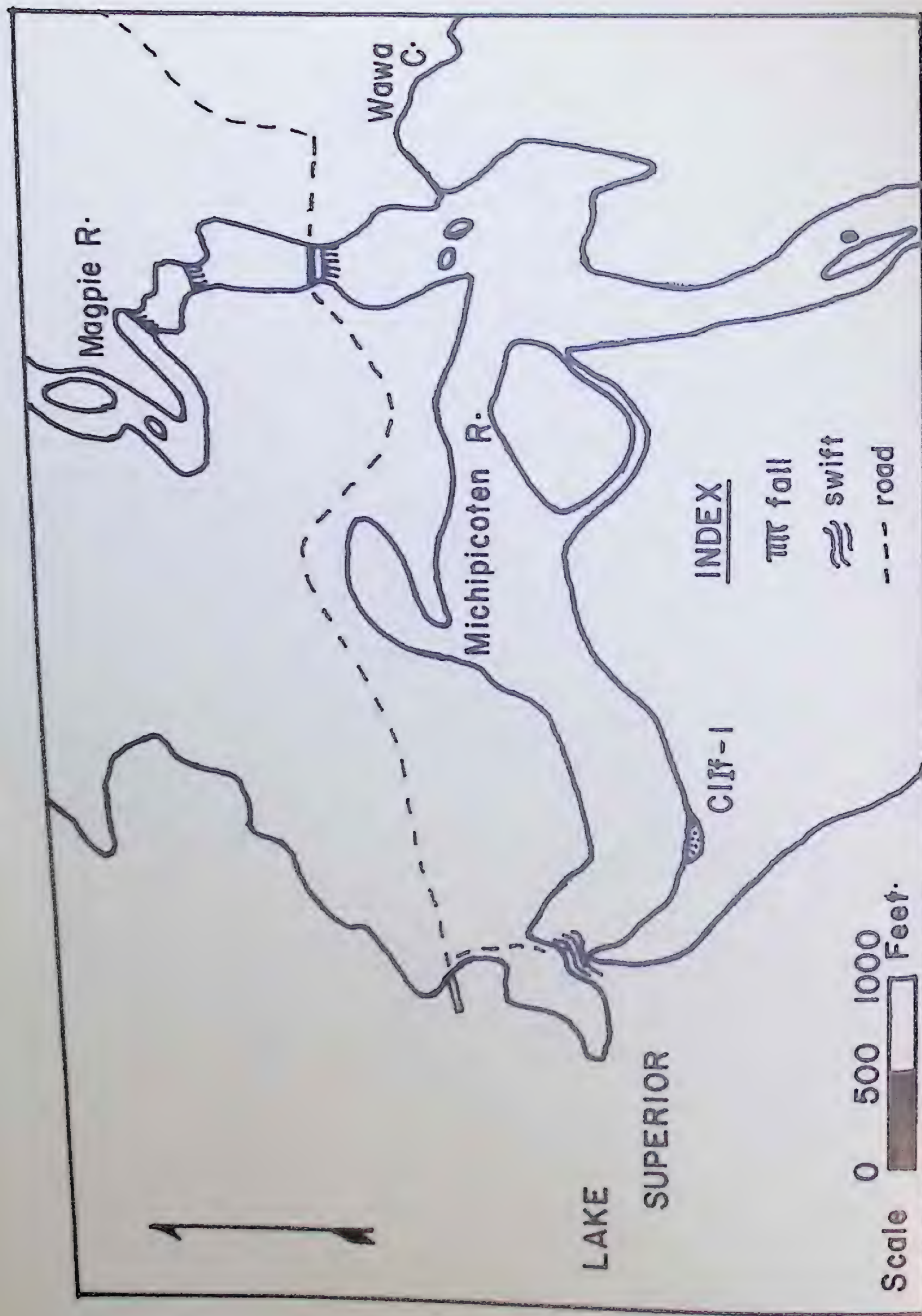


FIGURE 2—General map of site area

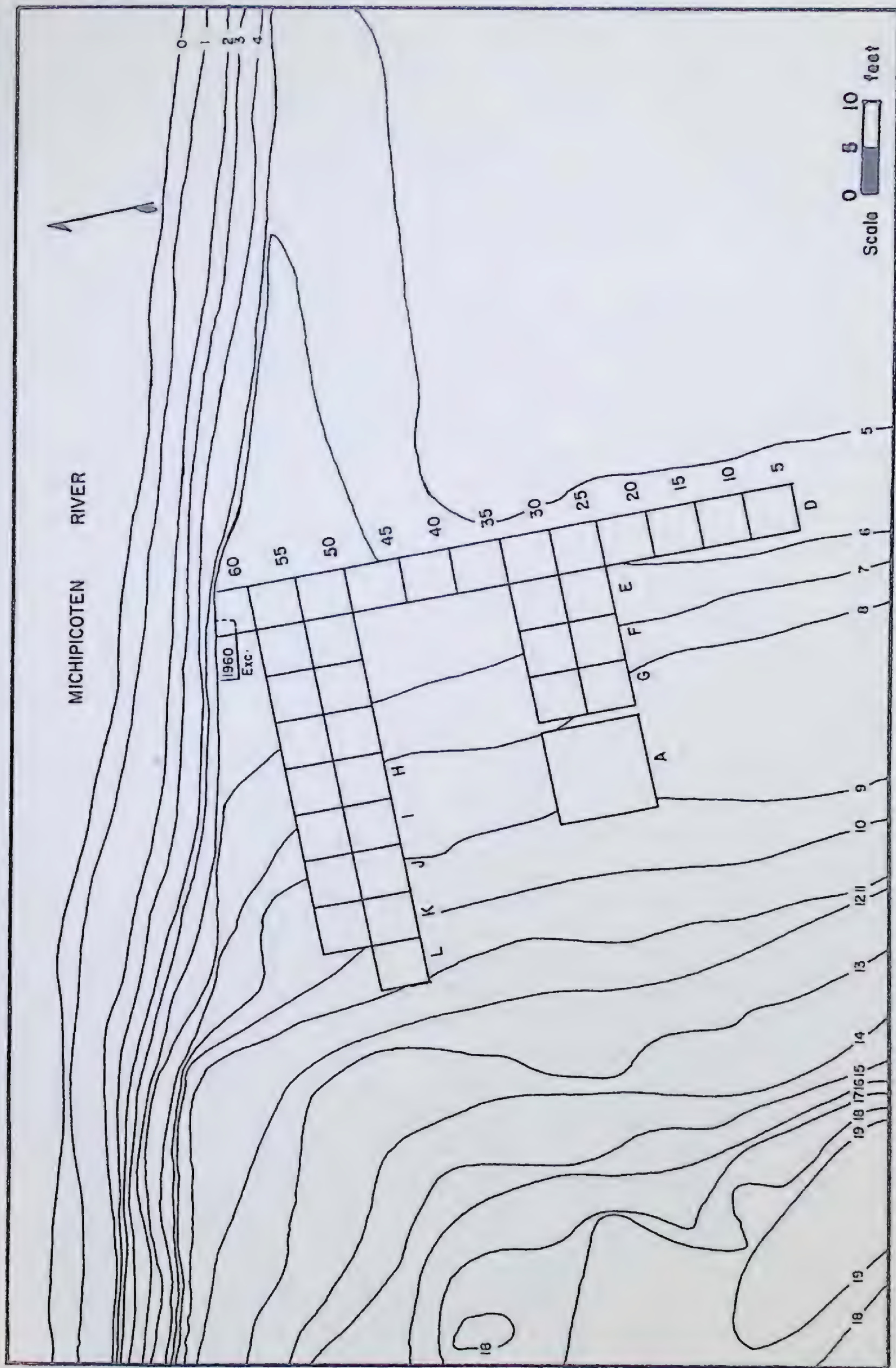


FIGURE 3—Excavation plan

alleviate side-wall slumping, although little could be done to control this chronic problem effectively. The D-line of the excavation was oriented on a north-south axis and extended over relatively flat ground with a consistent stratigraphic condition throughout its sixty-foot length. The other excavation units extended to the west and uphill, and the stratigraphic condition was far from being consistent. Indeed, within as short a distance as five feet a stratum may diverge, converge, or disappear. This situation is attributed to the extensive and, apparently, erratic wind deposition on the western portion of the site. Evidence of aeolian deposits in the D-line was minimal, and the earliest evidence of human occupation was consistently encountered at five feet, just above the water table. The great bulk of this five-foot deposit, however, was represented by sterile fluvial deposits of sand and occasionally lens of granules and pebbles. As the excavations moved westward, the depth of deposits and slumping increased, with the result that the earliest strata in the most westerly excavation units were almost certainly not reached. The very depositional forces that made the site so valuable in terms of stratigraphic sequence also created a number of problems for the effective excavation of individual strata.

Strata represented by distinct and continuous soil conditions were excavated as discrete units. This condition applied only for the upper three strata which also were the richest at the site. Horizontal and vertical locations were taken on all rim sherds and stone tools encountered in these strata. In the lower strata, where no consistent soil distinctions existed, an attempt was made to record the horizontal and vertical location of all artifacts including hearthstones and flakes. Using the profiles, the horizontal and vertical position of artifacts, and the locations of scattered ceramics, which were subsequently mended, a nine-component occupation of the Michipicoten site was arrived at. Strata were recorded numerically from the surface down, with the first three strata being demarcated by distinctive soil lenses. The remaining six strata, lacking soil distinctions, were isolated on the basis of artifact and refuse locations supplemented by the distribution of fragments making up mended specimens. A consistent sequence of components was obtained by this technique for the D-line and immediately adjacent excavation units. Profiles and mended specimens were used to extrapolate this stratigraphic sequence to the other excavation units, although in the westernmost portions of these units the extrapolation could only be applied down to stratum IV with any degree of certainty. Figure 4 presents the stratigraphic sequence seen in the west profiles of squares D-25, D-30, and D-35. This profile is representative of the entire D-line. The lower strata, from IV to IX, were represented by a thin veneer of refuse occurring in sands and frequently capped by a thin lens of gravel. All had a relatively continuous distribution and consistent depth. For example, the lowest dotted line on Figure 4 represents the living floor of stratum IX, and the dotted line above this, the living floor of stratum VIII. In every case these living floors, represented by a thin veneer of cultural material, were capped with a sterile to semi-sterile deposit of sand and gravel. The odd specimen found slightly above each

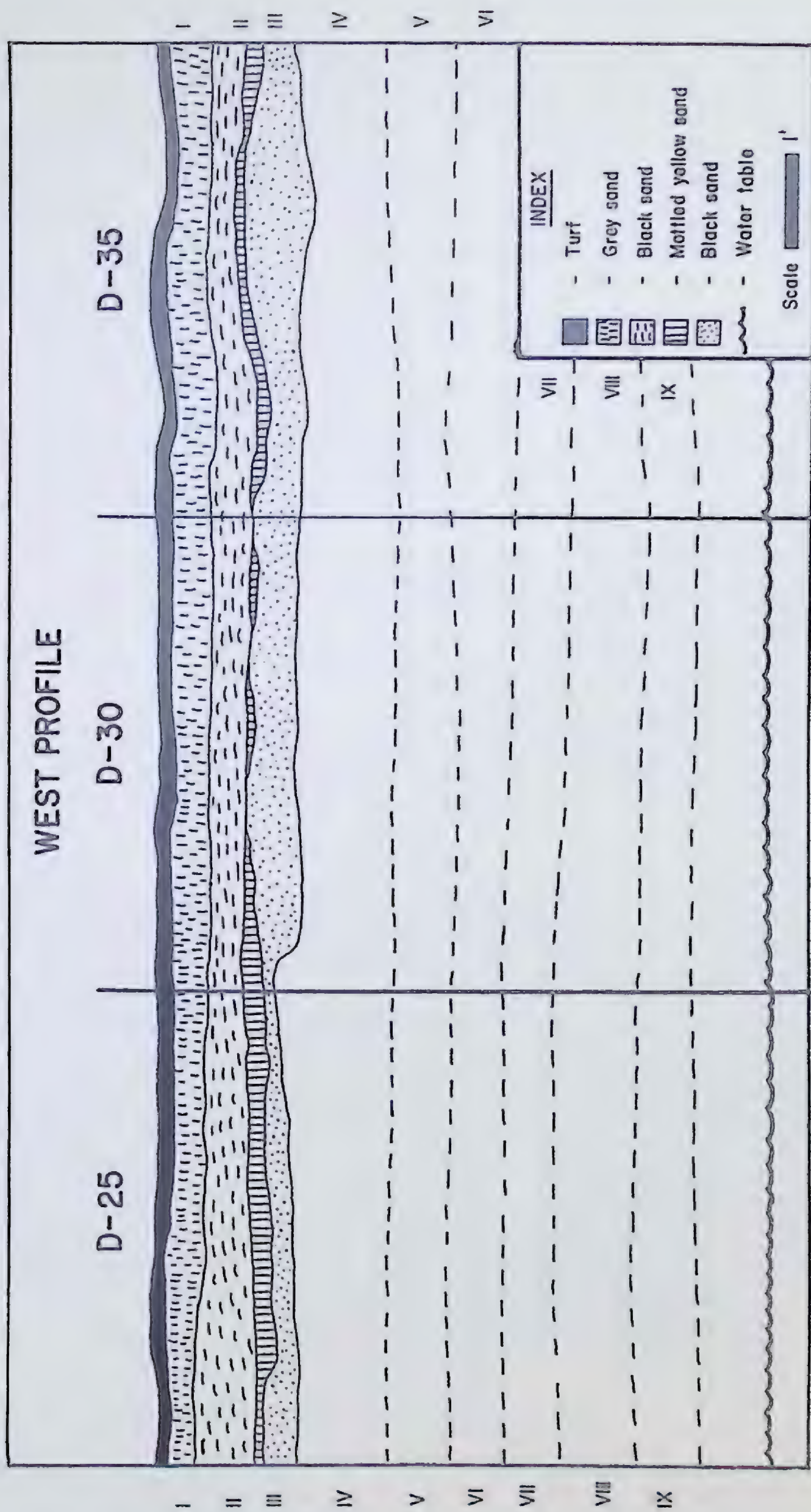


FIGURE 4—Stratigraphy

living floor was included within the same stratum. From stratum IV down, there is a consistent picture of small groups of people occupying the bank of the river, which was periodically flooded. As there is no evidence of old forest floors, it is assumed that these occupations took place on a bank relatively denuded of vegetation. The presence of gravel lenses, gradiated sand deposits, and the occasional water-washed body sherd attests to the velocity and nature of the depositing agent. Evidence of aeolian deposition is limited to the upper three strata and possibly the upper portion of stratum IV. The effect of this form of deposition on the relative depths of the upper components can be seen in the basal depths of stratum III which were approximately 16 inches in the D-line, 40 inches in the western end of square K-55, 5 feet in the western edge of square A, and 6.5 feet in the bank cut. In contrast to these differences in overburden, the basal portion of stratum III is 5 feet above the water table in the D-line and 6.5 feet above the same water table in the bank cut (Plate I and Figure 4). From the stratigraphic evidence it would appear that, although the western part of the site was originally somewhat more elevated than the eastern area, the present marked differences in elevation are due to relatively recent wind deposition from the exposed area between the site and the lake.

FEATURES

HUMAN BURIALS

Local residents report that at least two burials have eroded out of the river bank. No evidence of human remains, however, were encountered during the excavation.

DOG BURIALS

Despite the extremely poor state of bone preservation at the site, four possible dog burials were encountered. Three of these burials were in such a state of decay that their identification had to be made in the field since the majority of the bones disintegrated on being lifted and since the remainder of the bones had disintegrated by the time they arrived at the laboratory. All three of these uncertain dog burials were recovered from squares D-45, D-55, and E-30 in stratum III, and in one instance a grave extended partly into stratum IV. The one definite dog burial was recovered in 1960 from stratum III in Test Trench 1. Although the bones were in a poor state of preservation, sufficient remained intact to identify a compact bundle burial measuring 12 inches by 7 inches by 4 inches. The skull faced south and headed west, and a number of the vertebrae, ribs, and longbones were articulated. A thin lens of windblown sand capped stratum III in this trench, a condition suggesting that the burial was not intrusive from stratum II.

HEARTHES

Three varieties of hearths occurred at the site; these have been called pit hearths, fired hearth floors, and firestone hearth floors.

The pit hearths contain an abundance of firestone and charcoal but relatively little refuse. Five such features were encountered, consisting of the following: a pear-shaped pit measuring 18 inches by 9 inches with a

depth of 7 inches, rich in charcoal and capped by a solid layer of firestone, located in square D-15, stratum III; a circular pit with a diameter of 8 inches and a depth of 7 inches, rich in charcoal, the odd sherd, and packed solidly with firestone, located in square D-25, stratum III; an ovate pit measuring 21 inches by 10 inches with a depth of 10 inches, densely packed with firestone and charcoal and containing the odd sherd and flake, located in square D-30, stratum III; a circular pit 12 inches in diameter and 18 inches deep, rich in firestone and ash, located in square G-55, stratum III; and a circular pit 12 inches in diameter and 18 inches deep containing firestone, ash, and a small quantity of refuse, located in square J-55, stratum III.

The fired hearth floors represent irregular areas of burnt sand ranging from 1 inch to 1½ inches in thickness and lacking refuse except for the odd firestone fragment. Three such features were encountered, consisting of the following: an irregular portion of brown, fired sand with a maximum length of 23 inches, located in square E-50, stratum II; a portion of red burnt sand situated in square F-55, stratum III; a red burnt sand area partly cut by Ridley's trench and containing the odd item of refuse, located in square I-55, stratum III.

The firestone hearth floors (Plate II, fig. 2) consist of a layer of firestone, which is generally irregular in outline. Three firestone hearth floors were excavated, consisting of the following: a solid floor of firestone, roughly ovate in shape, measuring 36 inches by 40 inches and containing some pottery, located in squares D-50 and D-55, stratum II; a portion of a solid floor of firestone with a length of at least four feet, located in squares E-30 and F-30, stratum I; and a small circular concentration of firestone with a diameter of 18 inches, located in square E-55, stratum III.

REFUSE PITS

Only three pits were encountered whose primary purpose is inferred to have been refuse disposal. They consisted of the following: a roughly circular pit, 26 inches in diameter and 14 inches deep, containing black sand and the odd item of refuse, located in square D-40, stratum III; a portion of a pit, which was not completely excavated but possessed a maximum depth of 14 inches and contained black sand and refuse, located in square D-60, stratum III; and a circular pit 15 inches in diameter and 18 inches in depth, which contained nothing but black sand, located in square K-55, stratum II.

POST MOULDS

The twenty-four post moulds recognized during the excavation did not form a discernible pattern. Two of the posts were associated with stratum IV, and the remainder related to stratum III, although it is quite possible that some of these posts were intrusive from stratum II. Diameters ranged from 3 inches to 8 inches with a mean of 4.6 inches, whereas depths ranged from 4 inches to 23 inches with a mean of 9.7 inches.

OCHRE DEPOSITS

Four deposits of red ochre were found in the following squares and strata: E-25, III; E-55, IV; G-25, II; G-55, IV.

RIDLEY'S TRENCH

A five-foot-wide trench crossed squares H-55 and I-55 at approximately a right angle and terminated in a squared face roughly two feet into the northern edge of squares H-50 and I-50. The trench attained a maximum depth of four feet. There is little doubt that this previous excavation is the result of Mr. Frank Ridley's work in 1955.

The following analysis proceeds through stratum I to stratum IX. Strata I, II, and III, however, are composed of a number of strata as indicated by the situation in the western portion of the site. For purposes of effective analysis and communication, the composite strata representing a limited time span and consistent with the stratigraphy of the D-line are referred to as a single stratum.

STRATUM I

Stratum I consisted of the surface turf and the grey windblown sand which capped stratum II. Most of the artifacts recovered were of European manufacture; the few aboriginal items found may even be extrusive from earlier components through the action of tree falls. A single firestone hearth encountered in squares E-30 and F-30 was the only feature to be discovered in the stratum. The majority of the European artifacts appear to relate to the 19th century, although a few specimens may be assigned to the 20th century.

EUROPEAN ITEMS

Gunflints (2) — Both gunflints were of French origin (Plate III, fig. 10).

Iron knives (3) — All three knives were of the butcher knife variety, and one was complete (Plate III, figs. 6, 7). The blade portion of the specimen not illustrated had been cut away from the haft and may have functioned as a lance head.

Iron strapping (6) — Six fragments of iron strapping, two with punched holes, were recovered.

Iron strike-a-light (1) — A single iron strike-a-light was found (Plate III, fig. 1).

Lead net sinker (1) — A long cylindrical lead object with a longitudinal hole has been interpreted as a net sinker (Plate III, fig. 5).

Lead sheet (1) — A thick (5 mm) sheet of lead with cut marks around the edges was probably used in the manufacture of such items as musket balls and sinkers (Plate III, fig. 9).

Ramrod ferrule (1) — A single brass ramrod ferrule was found (Plate III, fig. 4).

Kettle fragment (1) — A large cut and folded fragment of brass kettle had been bevelled along three edges and probably functioned as a scraper (Plate III, fig. 8).

Cartridge case (1) — The single brass cartridge case found was marked on the base 44 WCF REM-UMC.

Buttons (2) — Two buttons, one of iron with four perforations and the other of cut glass with a wire loop attachment, were found.

Iron nail (1) — One large cut iron nail was recovered.

Leather shoe (1) — The fragments of a child's leather shoe with iron studs were found.

Kaolin pipe fragments (5) — Four plain bowl fragments of kaolin pipes and one stem fragment were recovered (Plate III, figs. 2, 3).

China fragments — Sherds from two china plates and one cup were found.

Glass fragments — The glass fragments recovered belonged to both bottles and window panes.

ABORIGINAL ITEMS

Ceramics (3) — The three body sherds found had different surface treatments consisting of plain, ribbed paddle, and cord malleated. The plain specimen is illustrated on Plate III, fig. 12. Their respective thicknesses were 5 mm, 4 mm, and 4 mm.

Hammerstone (1) — A single cobble hammerstone was found which possessed hammering facets around its edge and on two faces (Plate III, fig. 11). If this specimen had been more extensively used, it would have been classified as an anvil stone.

Scraper (1) — One quartz end scraper was recovered. The specimen is 27 mm long, 19 mm wide at the scraping end with a scraping face height of 9 mm.

Wedge (1) — A single wedge of Rosspoint flint was found. This black, coal-like flint was probably obtained from the Rosspoint area 120 miles to the northwest on the Lake Superior coast. The form characteristics of wedges and their possible function will be discussed in detail in the section treating stratum II. The specimen under consideration measured 21 mm long, 19 mm wide, and 8 mm thick (Plate III, fig. 13).

Bone artifact (1) — This specimen may represent either the carbonized tip of a bone awl or projectile point (Plate III, fig. 14).

Detritus (5) — Of the five flakes found, three were of nodular flint, one was of Rosspoint flint, and one was of quartz.

Faunal remains (2) — One clam shell and a small quantity of mammal bone were recovered. From the latter only beaver (*Castor canadensis*) could be identified.¹

STRATUM II

In the D-line a solid stratum of black sand rested directly upon stratum III, or a thin intervening deposit of blow sand separated it from stratum III. Both the upper black stratum and the irregularly occurring lens of blow sand are regarded as stratum II. In the western portions of the

¹Mr. P. M. Youngman of the Zoology Division, National Museum of Canada, supervised the identification of the mammal bones from the site.

excavation the black sand stratum diverged into as many as three thin and discontinuous black lenses separated by increasingly thicker deposits of sterile to semi-sterile sand. The European trade goods that occurred in this stratum were in direct association with an abundance of native artifacts. An estimated age of the stratum would be the first half of the 18th century. It is certain that a number of seasonal occupations are represented in stratum II, for what appears to be a single refuse mantle in the D-line diverges into a number of strata to the west and interdigitates with the windblown deposits in a more complex fashion. It is most likely, however, that less than a span of a hundred years is involved in the stratum. Indeed, it is not impossible that some of the complex deposits to the west were formed in a single season. Four features were encountered in stratum II, and these consisted of a fire hearth floor in square E-50, a firestone hearth floor in squares D-50 and D-55, a refuse pit in square K-55, and an ochre deposit in square G-25. Some of the post moulds may also have originated in stratum II, although the majority are definitely assignable to stratum III.

EUROPEAN ITEMS

Gunflints (2) — Both gunflints were of English manufacture (Plate V, fig. 6).

Iron knife (1) — This small fragment appears to be the haft of an iron knife.

Lead pendant (1) — A single lead pendant with a sharply bifurcated base and two suspension holes was found (Plate V, fig. 4).

Kettle fragment (1) — One small fragment from a brass trade kettle was recovered.

Metal triangle (1) — One triangle cut from trade kettle was recovered (Plate V, fig. 3).

Metal awls (2) — Two awls had been manufactured from strips of rolled trade kettle (Plate V, fig. 1).

Metal beads (28) — Twenty-eight small (4 mm long and 2 mm by 3 mm in cross-section) brass beads had been bent onto a leather thong, which the copper salts preserved (Plate V, fig. 2).

Trade beads (6) — All six glass beads are classified as seed beads. Four are blue, and two are white. These beads are 2 mm long and 3 mm in diameter with the exception of one of the white specimens, which measures 5 mm in both dimensions (Plate V, fig. 5).

CERAMICS

Rim sherds (30) — The thirty analysable rim sherds recovered from stratum II belong to four different ceramic traditions or categories. These traditions are as follows: the Northern division, Huron-Petrun branch, Ontario Iroquois Tradition; the Peninsular Woodland; and two undefined ceramic assemblages, tentatively regarded as separate traditions and referred to as Stamped and Push-pull after the dominant decorative techniques.

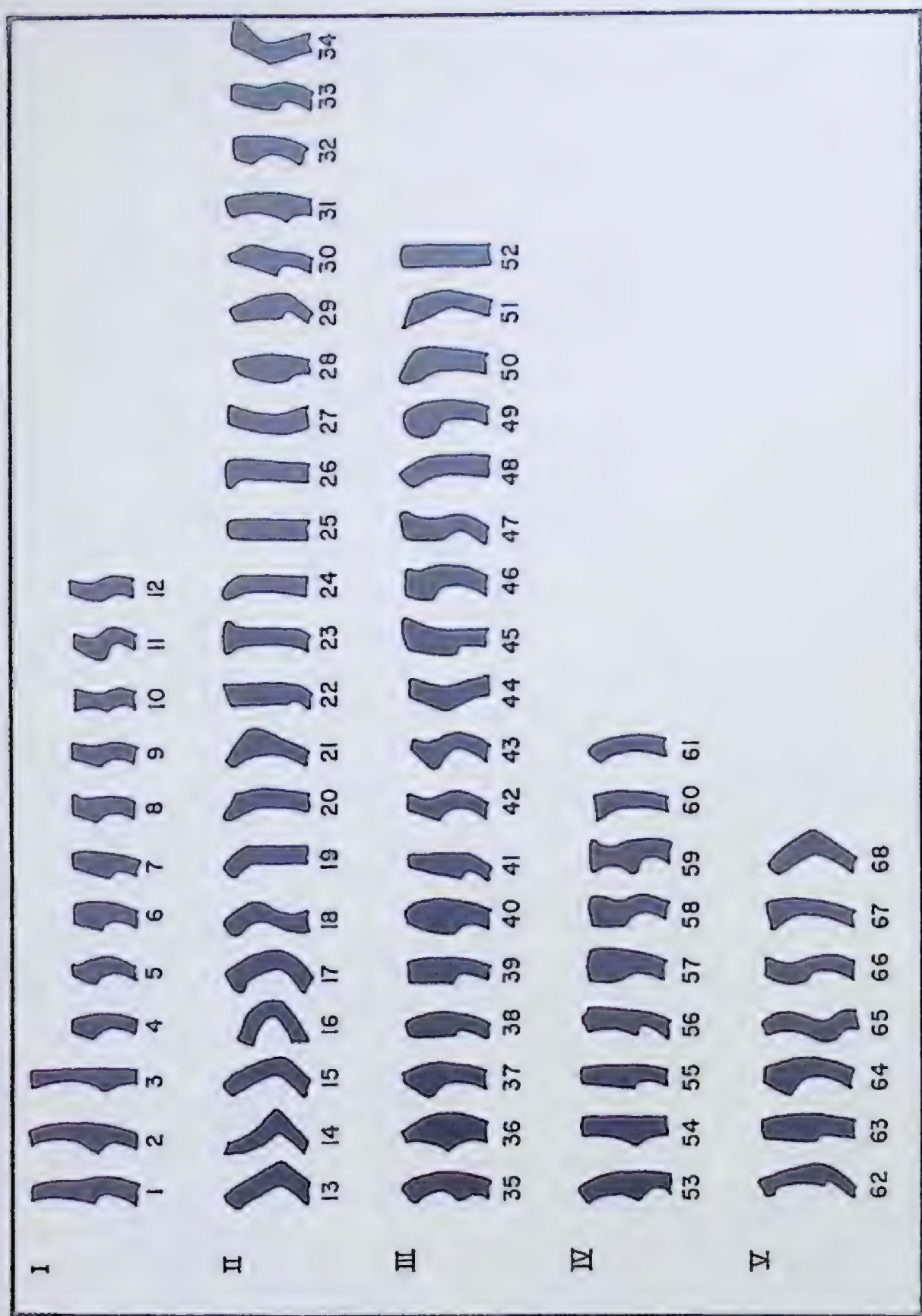


FIGURE 5—*Rim sherd profiles*

- I. Huron-Petun
- II. Peninsular Woodland
- III. Stamped
- IV. Push-pull
- V. Miscellaneous

Huron-Petun branch rim sherds

The thirteen Iroquois rim sherds from stratum II are assignable to the Northern division of the Huron-Petun branch (Wright 1966a) or, as it has been called earlier, the Lalonde culture (Ridley 1952). Four pottery types are represented (MacNeish 1952; Ridley 1952), and their frequencies are as follows: Lalonde High Collar—6; Huron Incised—5; Niagara Collared—1; and Sidey Notched—1. In the same sequence, rim profiles (Figure 5, I) are as follows: form 1 (2), form 2 (2), form 3 (1); form 4 (3), form 5 (1), form 6 (1); form 8 (1); and form 4 (1). Two nubbin castellations occurred with the Lalonde High Collar pottery type. Huron-Petun branch rim sherds are illustrated on Plate IV, figs. 1, 2.

Peninsular Woodland rim sherds

The Peninsular Woodland has been defined in general terms (Quimby 1960), but specific information is still incomplete. The ceramics occur in the upper peninsula and western half of the lower peninsula of Michigan and the portions of Wisconsin bordering Lake Michigan and Lake Superior, and the north shore of Lake Superior as far west as the Michipicoten site. In view of this distribution it is certain that more than one historic ethnic group was involved with the Peninsular Woodland assemblage. Indeed, an early historic site in eastern Wisconsin which produced pottery related to the Peninsular Woodland has been identified as a Fox village (Wittry 1963). A striking characteristic of the ceramics is vessel form, which differs radically from that of other Northeastern ceramic traditions and appears to reflect strong Upper Mississippi influence from the south. As a rim sherd typology has not yet been established for Peninsular Woodland ceramics, the sherds recovered from stratum II have been divided into three classes based upon exterior surface treatment. These classes are cord malleated, plain, and punctated. Cord malleated rim sherds possess vertical impressions, which are frequently obliterated in part by a final smoothing. The plain rim sherds lack any evidence of surface treatment, and the punctated rims have a plain surface and a single row of encircling punctates which does not raise interior bosses.

These three classes of rim sherds had the following occurrence: cord malleated—5 (Plate IV, figs. 5, 6); plain—5 (Plate IV, figs. 7, 8); and punctated—2 (Plate IV, fig. 4).

Lip treatment of the five cord malleated rims consisted of cord wrapped paddle impressions (2), plain (2), and notched (1). Interiors lacked decoration. Two incipient pointed castellations were represented. Rim profiles (Figure 5, II) consisted of form 13 (2), form 14 (1), form 17 (1), and destroyed (1).

Lip treatment of the five plain rims consisted of oblique cord wrapped stick impressions (2), plain (2), and notched (1). Interiors were plain. Two incipient pointed castellations were present. Rim profiles (Figure 5, II) consisted of form 16 (1), form 17 (2), form 15 (1), and form 23 (1).

The two punctated rims had plain interiors, and one had a notched lip and the other a plain lip. Rim profiles were both form 15.

Stamped rim sherds

The rim sherds of this category superficially resemble rim sherds of the Huron-Petun branch with regard to motif and rim form. The decorative technique of linear stamping and other attributes, however, clearly separate the two traditions at the specific level although there may be a general relationship between the two. Linear stamping virtually disappears from the Ontario Iroquois Tradition by A.D. 1350 but continues to be a popular decorative technique in the Late Woodland period of Michigan (Fitting 1965). It is, therefore, assumed that this ceramic tradition is an import into Ontario from Michigan. Needless to say, considerable new data will be necessary to evaluate properly the position of the Stamped category of rim sherds examined in this report, and their placement in a tradition is more a device of convenience than conviction.

The four Stamped rim sherds (Plate IV, fig. 3) from stratum II have been divided into two classes on the basis of motif. These classes are a single row of oblique or vertical linear stamping directly below the lip (generally on the short collar) and a row of oblique linear stamp above incised horizontals. Three specimens occurred in the first class and one in the remaining class. Lip or interior decoration was absent from all four sherds, and the single specimen with obliques above horizontals possessed an incipient pointed castellation. Rim profiles (Figure 5, III) were represented by form 35 (2) and 42 (1) for the first class and form 44 (1) for the second class.

Push-pull rim sherds

As with the Stamped category the Push-pull category is tentatively regarded as a discrete ceramic tradition. The defining attributes of the rims are collars, horizontal and oblique motifs, push-pull technique, and castellations which frequently possess the inverted chevron motif. Frequently the push-pull technique, which is used here to include linear punctating, resembles a single cord application. These rims closely resemble the 'interrupted-linear' variant of the Macomb Linear pottery type, which is present throughout the time span of the Younge Tradition of southeastern Michigan (Fitting 1965). Similar pottery occurred at the stratified Late Woodland Juntunen site on Bois Blanc Island in the Straits of Mackinac (McPherron 1963) and in the historic component of the Pic River site to the northwest of the Michipicoten site (Wright 1966*b*). These ceramics would definitely appear to be an import into Ontario from the northern portion of the lower peninsula of Michigan. The sharp decline of the push-pull technique in the Ontario Iroquois Tradition by A.D. 1400 does not support the argument for its direct origin from Southern Ontario.

A single Push-pull rim sherd was recovered from stratum II (Plate IV, fig. 9). This sherd possessed a horizontal motif on the collar executed by the push-pull technique with some irregularly toothed implement. The horizontal motif is broken by an inverted chevron, which probably occurred below a destroyed castellation. Encircling punctates, done with the same irregularly toothed implement, occur on the lip, although the interior is plain. Rim profile (Figure 5, IV) is form 54.

TABLE 1—*Rim sherd categories*

Category	<i>f</i>	%
Huron-Petun branch.....	13	43.3
Peninsular Woodland.....	12	40.0
Stamped.....	4	13.3
Push-pull.....	1	3.3
Totals.....	30	99.9

Body sherds (284) — The body sherds were classified on the basis of surface treatment. These data are given in Table 2 along with thickness. One sherd possessed a mend hole and another had an interior boss.

TABLE 2—*Body sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	169	59.5	2-13	6.6
Smoothed-over cord.....	70	24.6	4-13	6.8
Cord malleated.....	34	12.0	3-12	5.5
Ribbed paddle.....	6	2.1	4-12	7.2
Net impressed.....	2	.7	6-7	6.5
Incised.....	2	.7	3-7	5.0
Incising and punctating over cord malleation.....	1	.4	—	5.0
Totals.....	284	100.0		

Neck sherds (42) — Neck sherds were separated from body sherds on the basis of curvature. The varieties of surface treatment and thickness data are given in Table 3.

TABLE 3—*Neck sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	33	78.6	4-11	7.8
Smoothed-over cord.....	5	11.9	4-10	7.0
Cord malleated.....	2	4.8	5-8	6.5
Ribbed paddle.....	1	2.4	—	—
Fabric impressed.....	1	2.4	—	9.0
Totals.....	42	100.1		

Shoulder sherds (13) — All the shoulder sherds recognized can be assigned to the Huron-Petun branch. The absence of non-Iroquois shoulder sherds suggests that the juncture of the body and neck in the other traditions is so incipient that the sherds could not be effectively separated from the body sherds. Surface treatment on all thirteen specimens was plain, and

decoration consisted of the following: single row of punctates (11); single row of punctates below incised horizontals (1); and row of punctates above and below incised horizontals. Four of the specimens possessed carinated shoulders, and the remainder were incipient. Thickness ranged from 4 mm to 10 mm with a mean of 7.2 mm.

Children's vessels (4) — Three rim sherds and one body sherd of miniature vessels were found. These are regarded as the product of young girls learning the ceramic art.

Pipes (10) — Four of the specimens were stem fragments possessing reed holes, and one was a very small fragment of a plain pipe bowl. The remaining five specimens are more informative. Two of these are assignable to the Huron-Petun branch, one being a complete acorn ring pipe (Plate IV, fig. 10) and the other a bowl fragment from a plain trumpet pipe (Plate IV, fig. 13). The remaining three pipe fragments are non-Iroquois in appearance and therefore probably represent Michigan imports or local products. Their description is as follows: a crude, heavily tempered, flat-lipped bowl fragment with punctates below the lip edge and encircling the lip (Plate IV, fig. 12); a crude, plain, flat lipped bowl fragment; and a very crude, small, plain bowl fragment, which may be the handiwork of a child.

The single stone pipe recovered will be considered in the stone tool analysis.

STONE TOOLS

Arrowheads (3) — All three arrowheads are triangular in shape (Plate V, figs. 7, 8), and one is completely bifacially chipped while the remaining two are largely unaltered on both faces with chipping being restricted to the edges. Length measurements of the two complete specimens are 23 mm and 26 mm. Maximum width (basal) and thickness measurements on all three specimens are 13 mm, 16 mm, 16 mm, and 3 mm, 3 mm, 4 mm, respectively.

End scrapers (5) — All the end scrapers are plano-convex and possess an unaltered ventral face. One specimen (Plate V, fig. 10) has a graver spur to one side of the end scraping face. Scraping faces occur as follows: end only (2); end and one side (2); end and both sides (1). Lengths range from 18 mm to 27 mm with a mean of 22.4 mm; width at the end scraping face ranges from 17 mm to 26 mm with a mean of 21.8 mm. The height of the end scraping face ranges from 4 mm to 8 mm with a mean of 6.6 mm (Plate V, figs. 9, 10).

Side scrapers (5) — Ventral retouch occurs on two specimens. The single scraping face, which runs along one long edge of the flake, ranges from 17 mm to 53 mm in length with a mean of 28 mm (Plate V, figs. 11, 12).

Spokeshave (1) — This single specimen has a concave depression along one edge for 10 mm, a depth of 2 mm, and along the opposite edge a possible graver spur (Plate V, fig. 13).

Small tools (2) — The small tool category is a catchall for artifacts which deviate from standard scraper forms, although they are related to the

scrapers. Their general form consists of a sharply restricted area of retouch on flakes which vary widely in form. This restricting of the retouch to a relatively small portion of the flake may have been necessary for certain specialized scraping, cutting, and possibly gouging functions. On the specimens under consideration, flake lengths are 28 mm and 30 mm, opposed to length of retouch of 8 mm and 10 mm, respectively (Plate V, fig. 14).

Wedges (12) — This class of artifacts probably served a number of gouging, chiselling, graving, and cutting functions. The process of achieving a sharp, straight edge appears to be responsible for the form and, indeed, the creation of the tool. In a sense, the wedge is in a transitional position between the unmodified, utilized flake and the purposefully chipped tool. In order to achieve a straight cutting edge, a thick flake was probably placed on an anvil and gently tapped on one edge with flakes being removed from both the edge being struck and the edge in contact with the anvil stone. This procedure results in both edges having a crushed appearance with numerous stepped flake scars extending down from both edges. In a number of respects they resemble cores, and I have classified them as such in the past. Experimentation, however, convinced me that these items could not possibly be cores. Also, their absence from certain archaeological assemblages, such as the Laurel Tradition of the Middle Woodland period, suggests that they are the product of culturally determined behaviour and not simply a wastage item from the chipping technology.

Length, measured from one crushed edge to the other, ranges from 15 mm to 28 mm with a mean of 20.4 mm. Width ranges from 8 mm to 26 mm with a mean of 16.6 mm, and thickness ranges from 4 mm to 9 mm with a mean of 6.8 mm (Plate V, figs. 15-17).

Abraders (9) — Nine fragments of fine- to medium-grained sandstone abraders were found. Only one specimen possessed a recognizable shape and that was rectangular (Plate V, fig. 23). Edge grinding, in addition to face grinding, was apparent in four instances. Thickness ranged from 6 mm to 28 mm with a mean of 12.9 mm.

Manos (2) — These specimens of coarse sandstone may be large abraders or multi-purpose grinding implements. The more complete specimen possesses evidence of use on both faces and is approximately ovate in shape measuring 109 mm by 98 mm by 42 mm.

Anvil stone (1) — This almost circular specimen has shallow central pits on both faces and evidence of hammering around its entire circumference. It measures 98 mm by 84 mm by 37 mm (Plate V, fig. 21).

Hammerstones (3) — All three hammerstones are unmodified natural cobbles. The two complete specimens are ovate and rectanguloid in shape. The former has hammering facets around all edges except at one end, whereas the latter specimen possesses a single hammering facet at one end. Respective measurements are 80 mm by 70 mm by 35 mm and 82 mm by 42 mm by 25 mm (Plate V, fig. 22).

Pipe (1) — A red catlinite pipe with an encircling metal band was found. The specimen is covered with curvilinear and geometric etching and possesses a basal hole for a safety cord attachment to the wooden stem (Plate IV, fig. 11).

NATIVE COPPER

Rings (2) — Two native copper finger rings, made from flattened bars of copper folded around themselves, were found. Both diameters measure 21 mm, whereas band width and band thickness are 9 mm, 4 mm, and 1 mm, 2 mm, respectively (Plate V, fig. 19).

Awl (?) (1) — This flat, pointed object is 64 mm long, 5 mm wide at the mid-point, and 1 mm thick. Its function is difficult to ascertain. The base is split, and one side of the split is looped to suggest a possible broken eye-hole for a needle (Plate V, fig. 18).

Wastage — Native copper wastage consisted of six flattened fragments and one nugget. There were also three other fragments, which may have come from a European kettle.

MISCELLANEOUS

Faunal analysis — Three mammals were identified from the small quantity of bone refuse recovered. These are beaver (*Castor canadensis*), caribou (*Rangifer tarandus*), and moose *Alces alces*).

Pitch — A small ball of pitch was recovered (Plate V, fig. 20).

Varieties of stone materials used — Table 4 presents a rough breakdown of the variety of siliceous materials used in stratum II and the relative frequency of wastage to stone tools.

TABLE 4—Weights of detritus varieties and artifact classes

Material and class	Weight (gm)	%
Nodular flint flakes.....	160	34.2
Quartz flakes.....	70	15.0
Nodular flint cores.....	77	16.5
Rosspport flint flakes.....	16	3.4
Translucent Rosspport flint flake.....	3	0.6
Igneous flakes.....	51	10.9
Nodular flint arrowheads.....	4	0.9
Nodular flint scrapers.....	36	7.7
Quartz scrapers.....	4	0.9
Rosspport flint scrapers.....	8	1.7
Nodular flint spokeshave.....	2	0.4
Nodular flint small tools.....	5	1.1
Nodular flint wedges.....	32	6.8
Totals.....	468	100.1

The frequency of 80.6 per cent detritus to 19.5 per cent chipped stone tools suggests that chipping material was not overly scarce; otherwise it would be suspected that a higher percentage of the detritus would have been worked into tools. Also the varieties of siliceous material present do not reflect wide trade relations.

STRATUM III

Stratum III represents the major occupation of the Michipicoten site. In the D-line the stratum consisted of a solid, black sand deposit, very rich in refuse. As was the case with stratum II, stratum III diverged into three strata to the west of the D-line. These strata were separated from one another by sterile to semi-sterile bands of blow sand, which increased in thickness the more westerly the location. Unlike stratum II, the diverging strata of stratum III remained relatively continuous and did not pinch out and then reappear. The situation seen in the western portion of the excavation supports the proposal that stratum III is the accretionary result of an undetermined number of seasonal occupations. Analysis of the diverging strata to the west revealed no apparent typological or attribute changes, although the samples were small. The evidence suggests that, although stratum III is composed of at least three occupations, the time gaps between the occupations are short.

The majority of the features encountered on the site were associated with stratum III. A charcoal sample recovered from square E-50 at a depth of 11 to 12 inches in stratum III was submitted to Dr. K. J. McCallum of the University of Saskatchewan for radiocarbon dating. The sample gave a reading of 490 ± 75 (S-169) or A.D. 1460¹ and was in close agreement with the seriation estimate of A.D. 1450-1500.

CERAMICS

Rim sherds (179) — The rim sherds from stratum III belong to five categories, four of which are probably the product of separate ceramic traditions. These four are the same as those discussed in the section treating stratum II—the Huron-Petun branch, the Peninsular Woodland, the Stampel rims, and the Push-pull rims. The fifth category is represented by two miscellaneous rim sherds.

Huron-Petun branch rim sherds

Table 5 presents the frequency of the Iroquois pottery types encountered in stratum III.

TABLE 5—Huron-Petun branch rim sherds

Pottery type	<i>f</i>	%
Lalonde High Collar.....	5	19.2
Huron Incised.....	5	19.2
Black Necked.....	4	15.4
Pound Necked.....	3	11.5
Ontario Horizontal.....	3	11.5
Niagara Collared.....	2	7.7
Sidey Notched.....	2	7.7
Warminster Horizontal.....	1	3.9
Middleport Oblique.....	1	3.9
Totals.....	26	100.0

¹This date has been erroneously given as A.D. 1472 $\pm$ 75 (Wright 1965: 205).

Rim profiles (Figure 5, I) consist of the following: Lalonde High Collar—form 1 (3), form 2 (1), form 3 (1); Huron Incised—form 4 (4), form 7 (1); Black Necked—form 4 (3), form 5 (1); Pound Necked—form 10 (1), form 9 (1); Ontario Horizontal—form 1 (1), form 12 (2); Niagara Collared—form 4 (1), form 12 (1); Sidey Notched—form 4 (1), form 11 (1); Warminster Horizontal—form 4 (1); Middleport Oblique—form 9 (1).

The following castellation varieties are represented: Lalonde High Collar—nubbin (1), classic pointed (1); Black Necked—multiple pointed (1), incipient pointed (1); Niagara Collared—incipient pointed (1); and Sidey Notched—multiple pointed (1).

Huron-Petun branch rim sherds are illustrated on Plate VI.

Peninsular Woodland rim sherds

In addition to the three subdivisions of Peninsular Woodland rim sherds applied to stratum II (cord malleated, plain, and punctated) there are four additional minor classes necessary for the organization of the sherds recovered from stratum III. These additional classes are decorated, fabric impressed, collared, and finger incised.

Cord malleated (32) — Cord malleation on the exterior of these rims is generally vertical, although occasional oblique or horizontal impressions occur. A final smoothing of the rim exterior is frequently present, although it is not sufficiently intensive to completely obliterate the evidence of cord malleation. Lip treatment consists of the following: plain (16); encircling punctates (7); notched (7); vertical linear stamp (1); cord malleated (1). Interior treatment is as follows: plain (26); destroyed (2); vertical cord wrapped stick (1); horizontal rows of punctates (2); pinched (1). The following rim profiles (Figure 5, II) are represented: form 15 (7); form 24 (3); form 13 (2); form 17 (2); form 26 (2); form 19 (1); form 18 (1); form 23 (1); form 25 (1); form 27 (1). Examples of cord malleated rim sherds from stratum III are illustrated on Plate VII, figs. 1–6.

Plain (29) — All these rims have been carefully smoothed below the lip for at least 20 mm, and below this, cord impressions may be present. Lip treatment consists of the following: notched (9); plain (6); encircling punctate (6); cord malleated (4); oblique cord wrapped stick (2); notched exterior corner (1); and notched with a cord wrapped stick (1). Interiors are plain (28), pinched (1), and destroyed (1). Two multiple incipient pointed castellations were present. The following observable rim profiles (Figure 5, II) occurred: form 15 (8); form 13 (3); form 17 (2); form 25 (2); form 26 (2); form 16 (1); form 21 (1); form 22 (1); form 28 (1). Examples of plain rim sherds are illustrated on Plate VII, figs. 7–9.

Punctated (9) — The punctated rim sherds fall into two groups: those with the encircling row of punctates some distance below the lip and those with the punctates so close to the lip that they assist in splaying the lip. There are six specimens of the former variety and three of the latter. In no instance do the punctates raise interior bosses.

The encircling row of punctates in the first variant ranges from 8 mm to 16 mm below the lip with a mean of 12.3 mm. Interiors are plain; five

have notched lips, and the remaining specimen possesses encircling punctates on the lip. Rim profiles (Figure 5, II) are as follows: form 15 (3); form 16 (1); form 25 (1); form 33 (1). Examples of this variant of the punctated rim are illustrated on Plate VII, figs. 10, 11.

Interiors of the second variant are plain, two of the lips have notches and the remaining specimen possesses encircling punctates. An incipient pointed castellation is present on one of the rims. The two observable rim profiles consist of forms 15 and 25. An example of this variant is illustrated on Plate VIII, fig. 5.

Decorated (5) — This class is characterized by a variety of motifs and decorative techniques occurring on the rim. The motifs and techniques are as follows: a row of incised obliques above incised horizontals with the incised motif being superimposed over a cord malleated surface; two incised horizontals above an encircling row of non-boss producing punctates; a plain area above incised opposed obliques; a plain area above cord wrapped opposed obliques; a plain area above incised verticals (Plate VIII, fig. 6). Interiors are plain, and lip treatment consists of the following: notched encircling punctate (1); vertical linear stamp (1); encircling cord wrapped stick with the exterior corner edge notched with the same implement (1). Incipient pointed castellations were present on two of the specimens. Rim profiles consist of the following: form 13 (1); form 15 (1); form 19 (1); form 26 (1); and form 22 (1).

Fabric impressed (4) — The exteriors of these rims are covered with twined fabric impression. Lips are plain (2), fabric impressed (1), or have encircling punctates (1). Interiors are plain except for a single specimen which has been both notched and pinched. Rim profiles are form 14 (1) and form 15 (3). A fabric-impressed rim is illustrated on Plate VIII, fig. 3.

Collared (3) — These sherds are characterized by a demarcated collar and similar decoration. Decoration consists of two encircling rows of punctates above and below the collar base (2) and a row of vertical linear stamp below the collar base (1). Interiors are plain, and lips are notched. Rim profiles (Figure 5, II) consist of form 29 (1), form 30 (1), and form 34 (1). An example of this class is illustrated on Plate VIII, fig. 4.

Finger incised (2) — Both of these rims possess oblique finger incisions on the exterior. The resulting shallow impressions are approximately 1 mm wide. One lip is notched and the other is plain; one interior is pinched and the other is plain. Rim profiles are both form 15. Both specimens are illustrated on Plate VIII, figs. 1, 2.

Stamped rim sherds

Six classes of Stamped rims are established on the basis of motif and technique; these are as follows: a row of oblique or vertical linear stamp (27); encircling punctates and incised horizontals (7); linear stamped cross (4); a row of vertical or oblique linear stamp above incised horizontals (3); rows of oblique linear stamp (2); punctated (2). The two classes of encircling punctates and incised horizontals, and punctated, were included with the stamped sherds as they appeared to relate most closely to this

category of rims and, in addition, the punctating in both instances tended to be rectilinear, thus posing the problem of how long a punctate has to be to become a linear stamp.

Oblique or vertical linear stamp (27) — With one exception the row of oblique or vertical linear stamp occurred on a short collar. Motifs consist of the following: verticals (14); obliques (8); obliques above a row of punctates (3); verticals above a row of punctates (1); a combined row of obliques and verticals (1). Lip treatment is represented by the following: plain (16); oblique linear stamp (3); vertical linear stamp (2); encircling punctates (2); cord malleated (2); oblique cord wrapped stick (1); and dragged obliques (1). Interiors are plain except for one instance each of oblique linear stamp and vertical linear stamp. Three multiple incipient pointed castellations are present, and collar height ranges from 13 mm to 29 mm with a mean of 19.3 mm. Rim profiles (Figure 5, III) are as follows: form 36(6); form 38(5); form 35(4); form 42(2); form 45(2); form 39(1); form 37(1); form 40(1); form 44(1); form 47(1); form 48(1) (see Plate IX, figs. 1–4 for examples).

Punctates and horizontals (7) — The relationship of motif to technique on these rims is as follows: an encircling row of punctates above and below incised horizontals (4); an encircling row of punctates above and below a single incised horizontal (1); an encircling row of punctates above and below a single incised horizontal, repeated (1); and incised horizontals above an encircling row of punctates (1). Interiors are plain, and lips have the following treatment: plain (4); encircling punctates (1); encircling cord (1); cord malleation (1). Collar heights range from 10 mm to 22 mm with a mean of 16.0 mm. Two incipient pointed castellations and one multiple incipient pointed are present. Observable rim profiles consist of the following: form 36(2); form 41(1); form 40(1); form 42(1); form 47(1); form 52(1). An example of these rim sherds is given on Plate IX, fig. 9.

Crisscross (4) — The motifs and techniques of the four rims are as follows: linear stamp crisscross on the collar above oblique plats of push-pull; linear stamp crisscross; oblique linear stamp crossed by short, horizontal linear stamp above two incised horizontals; oblique linear stamp crossed by short horizontal linear stamp. Interiors and lips are plain, except for one rim which has encircling punctates on the lip. Two incipient pointed castellations are present, and collar heights range from 10 mm to 32 mm with a mean of 20.8 mm. The four rim profiles are forms 35, 37, 38, and 42. An example is given on Plate IX, fig. 5.

Verticals or obliques above horizontals (3) — Motif and technique relationship is as follows: vertical turtle shell suture edge stamp above two incised horizontals (1); vertical linear stamp above incised horizontals (1); oblique linear stamp above incised horizontals above an encircling row of punctates (1). Interiors are plain as are the lips except for one specimen with vertical linear stamping. Collar heights range from 12 mm to 27 mm with a mean of 20 mm. A single incipient pointed castellation is present. The rim profiles are forms 35, 38, and 41. Examples are illustrated on Plate IX, figs. 8, 10.

Punctated (2) — Both of these rims have two horizontal rows vertical, rectanguloid punctates, which may even be regarded as short linear stamp. The interiors are plain, and the two lips are plain and encircling punctate. The single collared sherd has a collar height of 13 mm. Rim profiles are forms 39 and 49. An example is illustrated on Plate IX, fig. 5.

Rows of obliques (2) — Both rims possess two horizontal rows oblique linear stamp. Both interiors and one lip are plain, and the remaining lip has oblique cord wrapped stick impressions. The one collared rim has a collar height of 13 mm, and one specimen has an incipient pointed castellation. Rim profiles are forms 47 and 50. One of the rims is illustrated on Plate IX, fig. 6.

Push-pull rim sherds

Four varieties of Push-pull rims were recognized. They are as follows: horizontals (13); obliques and opposed obliques (7); opposed obliques above horizontals (1); a double row of push-pull forming a zig-zag motif (1). The decorative technique push-pull also includes linear punctate and, more rarely, dragged stamp. Not infrequently the linear punctate technique develops out of or fades into the typical push-pull technique. It may be that these varieties of a general push and/or pull decorative technique possess some significance, but within the present sample they appear to represent a single comparable unit.

Horizontals (13) — Occasionally associated with the horizontal motif are verticals or inverted chevrons, which occur under the castellations. Lip treatment is represented by the following: encircling punctate (3); oblique linear stamp (3); vertical linear stamp (2); vertical dragged stamp (2); notched (1); interior lip edge notching (1); plain (1). Interior treatment consisted of plain (7); destroyed (2); encircling punctates (1); a horizontal row of push-pull (1); punctates above horizontal push-pull, repeated (1); and oblique linear stamp (1). Four incipient pointed castellations and one multiple incipient pointed castellation were present. Motifs under the castellations consisted of two inverted chevrons and one band of verticals. Less than half the rims could be examined with reference to rim form or collar height. The three collared rims ranged in height from 15 mm to 33 mm with a mean of 25.7 mm. Rim profiles (Figure 5, IV) are as follows: form 61 (2); form 53 (1); form 55 (1); form 58 (1); and form 60 (1). Horizontal push-pull rims are illustrated on Plate VIII, figs. 8-11 and Plate X, fig. 1.

Obliques and opposed obliques (7) — Motifs consisted of obliques (4) and opposed obliques (3), although some of the opposed obliques almost certainly relate to the inverted chevron motif below castellations. Lip treatment is represented by the following: vertical dragged stamp (2); exterior lip edge notching (1); cord malleated (1); encircling push-pull (1); vertical push-pull (1); vertical linear stamp (1). Interior treatment consists of plain (4), oblique dragged stamp (2), and horizontal rows of push-pull (1). Two incipient pointed castellations are present, as are two inverted chevron motifs. The two collars which could be measured had heights of 17 mm and 30 mm.

Rim profiles (Figure 5, IV) are as follows: form 60 (2); form 53 (1); form 55 (1). An example of this class is illustrated on Plate VIII, fig. 7.

Opposed obliques above horizontals (1) — The lip and interior of this single rim are plain, and the rim profile is form 53 with a collar height of 27 mm.

Double row of push-pull forming a zig-zag motif (1) — The lip possesses encircling incising, and the interior is plain. An incipient pointed castellation is present, and the rim profile is form 60.

Miscellaneous rim sherds

Two rim sherds from stratum III could not be placed within any of the preceding categories.

The first specimen possesses horizontal twisted cord impressions above punctates on the exterior. The lip is notched or undulating and has an encircling twisted cord impression whereas the interior is plain. Rim profile (Figure 5, V) is form 67. This specimen is illustrated on Plate IX, fig. 11, and would appear to relate to the Macomb Linear pottery type (Fitting 1965: 156-157).

The second specimen has incised horizontals crossed by verticals to form squares above a row of punctates above zones of inverted cross-hatched triangles. Both the lip and interior are plain, and the rim profiles are form 68. The sherd is illustrated on Plate IX, fig. 12.

TABLE 6—*Rim sherd categories*

Category	<i>f</i>	%
Huron-Petun branch.....	26	14.5
Peninsular Woodland.....	84	46.9
Stamped.....	45	25.1
Push-pull.....	22	12.3
Miscellaneous.....	2	1.1
Totals.....	179	99.9

Body sherds (1,262)—The body sherds were classified on the basis of surface treatment, and these data are given in Table 7 along with the thickness.

TABLE 7—*Body sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	494	39.1	3-17	6.8
Smoothed-over cord.....	426	33.8	3-13	6.6
Cord malleated.....	281	22.3	3-12	6.2
Check stamp.....	16	1.3	4-11	7.6
Fabric impressed.....	16	1.3	4-8	6.7
Ribbed paddle.....	14	1.1	4-10	5.8
Decorated.....	10	.8	5-11	7.5
Scarified.....	5	.4	6-11	8.6
Totals.....	1,262	100.1		

Neck sherds and shoulder sherds (239) — These sherds were differentiated from body sherds on the basis of curvature. The surface treatment varieties and thickness data are given in Tables 8 and 9.

TABLE 8—*Neck sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	139	70.6	4-13	8.0
Smoothed-over cord.....	37	18.8	4-12	7.4
Cord malleated.....	9	4.6	5-12	7.4
Decorated.....	7	3.6	9-10	9.3
Fabric impressed.....	3	1.5	7-9	8.3
Scarified.....	2	1.0	7-9	8.0
Totals.....	197	100.1		

TABLE 9—*Shoulder sherd varieties*

Variety	<i>f</i>	%
One row of punctates on a plain surface.....	28	66.7
Plain neck, cord malleated body.....	6	14.3
Zoned incising on body, plain neck.....	2	4.8
Plain neck, cord malleated body separated by punctates.....	1	2.4
Overall cord malleation.....	1	2.4
Plain neck, ribbed body.....	1	2.4
Plain neck, check stamped body.....	1	2.4
Two rows of punctates on a plain surface.....	1	2.4
One row of punctates above horizontals above zoned incising.....	1	2.4
Totals.....	42	100.2

Of the 42 shoulder sherds, 12 are carinated. Thickness at the juncture of the body and neck ranges from 5 mm to 11 mm, with a mean of 7.6 mm.

Children's vessels (21) — Nineteen rim sherds and two body sherds are regarded as products of young girls learning the ceramic art. The paucity of body sherds suggests that sherds from the vessels were included in the body sherd analysis. Exterior treatment of the rims consists of the following: plain (8); linear stamped (4); incised (2); punctated (2); cord malleated (2); smoothed-over cord (1).

Pipes (23) — Six analysable bowls and 17 fragments of pipes were recovered. Of the analysable specimens four related to Iroquois and the remaining two are probably assignable to the ceramic complexes from Michigan. One each of the following Iroquois pipe types were present: ring vasiform (Plate XI, fig. 1); plain trumpet (Plate XI, fig. 2); Iroquois ring (Plate XI, fig. 3); ring conical (Plate XI, fig. 4). Two assumed Michigan pipes may be described as follows: crude, plain, conical bowl fragment with flat lip and abundant tempering material (Plate XI, fig. 6); crude, rectanguloid bowl fragment with drill holes for stem and crudely incised triangles filled with incised obliques on both sides of the bowl (Plate XI, fig. 5).

The remaining specimens consisted of ten stem fragments, three elbow fragments, two stems from pipes made by juveniles, one complete pipe stem painted red (Plate XI, fig. 7), and one plain bowl fragment. Stem holes were made by burnt-out reeds except for one instance of a twisted cord stem hole.

Ceramic wastage (5) — Five lumps of moulded clay are regarded as wastage from ceramic manufacture.

STONE TOOLS

Arrowheads (16) — Eleven of the arrowheads are triangular in shape, and the remaining five specimens are notched triangular. With reference to the triangular arrowheads, five are bifacially retouched and six are largely unaltered on either face with chipping on the edges only. Base form consists of straight (6), convex (4), and concave (1). Length ranges from 19 mm to 23 mm, with a mean of 20.3 mm. Maximum width ranges from 12 mm to 17 mm, with a mean of 15.4 mm. Thickness ranges from 3 mm to 5 mm, with a mean of 4.0 mm. The notched triangle arrowheads are generally notched in such an erratic fashion that they cannot be accurately classified as side-notched or corner-notched; only a single specimen of each of these forms of notching could be recognized. Two of these specimens are bifacially retouched, two are retouched along the edges only, and one is unifacially flaked. Base form is straight (2), convex (2), and irregular (1). Length ranges from 16 mm to 46 mm, with a mean of 23.8 mm. Maximum width ranges from 10 mm to 21 mm, with a mean of 14.4 mm. Thickness ranges from 2 mm to 7 mm, with a mean of 4.0 mm. Arrowheads are illustrated on Plate XI, figs. 8–14.

End scrapers (13) — All the end scrapers are plano-convex with an unaltered ventral face except for one specimen with minimal retouch on the ventral surface. Analysable scraping faces occur as follows: end only (5); end and two sides (3); end and one side (1). Length ranges from 8 mm to 34 mm, with a mean of 20.2 mm, and maximum width at the end scraping face ranges from 11 mm to 24 mm, with a mean of 17.5 mm. Height of the end scraping face ranges from 4 mm to 10 mm, with a mean of 5.4 mm. End scrapers are illustrated on Plate XI, figs. 15–18.

Side scrapers (12) — All specimens possess but a single scraping edge, and ventral retouch occurs on four specimens. Scraping edges range from 16 mm to 42 mm in length, with a mean of 24.2 mm, and scraping face height ranges from 1 mm to 9 mm, with a mean of 3.9 mm. Side scrapers are illustrated on Plate XI, figs. 19–21.

Concave side scrapers (4) — The concave side scraper differs from the spokeshave in possessing a broader retouched concavity rather than the sharp semicircular indentation of the latter. One specimen possesses three concave scraping faces whereas the remaining specimens have a single scraping face. Breadth of the scraping face ranges from 22 mm to 27 mm, with a mean of 24.3 mm. A concave side scraper is illustrated on Plate XI, fig. 23.

Ovate acuminate scrapers (2) — These scrapers are tear-drop shaped with scraping faces present along the entire edge. They are plano-convex and lack ventral retouch. Length, width, and maximum scraping face height are

23 mm and 27 mm, 12 mm and 18 mm, and 5 mm and 5 mm, respectively. An ovate acuminate scraper is illustrated on Plate XI, fig. 22.

Random flake scrapers (8) — Six of these random flakes possess a single scraping edge, and the rest have two scraping faces. Length of scraping edges ranges from 15 mm to 39 mm, with a mean of 24.2 mm. Height of scraping faces ranges from 1 mm to 4 mm, with a mean of 2.1 mm. A random flake scraper is illustrated on Plate XI, fig. 25.

Spokeshave (1) — This single specimen has two adjacent concavities 5 mm and 7 mm in length, with an intermediate graver spur. Scraping face height is 2 mm. The specimen is illustrated on Plate XI, fig. 24.

Small tools (8) — Retouch on these specimens consists of three with a single retouched edge, three with two retouched edges converging to a point, one with a single concave edge, and one with both edges bifacially retouched to give the specimen the appearance of a drill, although the tip is not pointed. Length of worked edges ranges from 10 mm to 20 mm, with a mean of 14.2 mm. Flake length ranges from 10 mm to 24 mm, with a mean of 20.6 mm. Small tools are illustrated on Plate XI, figs. 26–29.

Linear flakes (7) — Of the seven linear flakes, three have retouch along one edge, and one has retouch along both edges. The scraping edges range in length from 23 mm to 38 mm, with a mean of 28.4 mm; the height of scraping faces ranges from 1 mm to 2 mm, with a mean of 1.4 mm. Flake length ranges from 17 mm to 63 mm, with a mean of 35.4 mm. Width ranges from 8 mm to 15 mm, with a mean of 10.1 mm. Linear flakes are illustrated on Plate XII, figs. 1–4. A single core appears to have been prepared by striking off linear flakes (Plate XII, fig. 5).

Wedges (76) — The wedges range in length from 10 mm to 38 mm, with a mean of 22.5 mm. Width ranges from 9 mm to 42 mm, with a mean of 18.1 mm. Thickness ranges from 3 mm to 18 mm, with a mean of 7.4 mm. Wedges are illustrated on Plate XII, figs. 6–16.

Abraders (11) — Six complete pebbles and five fragments of fine- to medium-grained sandstone are represented. Other than evidence of abrasion, modification is absent except for one specimen which has been used along the edges as a hammerstone and on both faces as an anvil (Plate XII, fig. 23). There is some slight evidence of hammering on other specimens. The six complete specimens range in length from 65 mm to 80 mm; in width from 37 mm to 55 mm; in thickness from 13 mm to 35 mm; with respective means of 69.2 mm, 45.8 mm, and 20.0 mm.

Hammerstones (4) — All the hammerstones are unmodified natural cobbles. The three complete specimens are circular to ovate in shape, and two possess evidence of hammering at both ends and on one face. Length ranges from 69 mm to 77 mm, with a mean of 74.0 mm. Width ranges from 54 mm to 66 mm, with a mean of 58.7 mm; thickness ranges from 37 mm to 64 mm, with a mean of 49.7 mm (Plate XII, fig. 27).

Polishing stones (2) — These hard, igneous pebbles show evidence of having been used for polishing or grinding. One possesses such evidence on both faces and the other on one face only. The former specimen has also been used as a hammerstone along two edges. Length, width, and thickness

measurements are 68 mm, 52 mm, 18 mm, and 58 mm, 29 mm, and 26 mm (Plate XII, fig. 25).

Metates (2) — Two fragments of what may be small metates were recovered. One possesses grinding on both faces, and on one face the remnants of red ochre are still apparent. The other specimen has grinding on one face and slight evidence of use on the other. Anvil pits, however, are present on both faces, and some evidence of hammering is apparent along one of the fractured edges.

Spall-chopper (1) — This specimen consists of a large spall struck from a cobble stone. The point of percussion is clearly evident, as are the signs of use along one edge and at the end. The spall measures 102 mm by 72 mm.

Mano-anvil-hammer (1) — This natural ovate cobble possesses evidence of grinding and shallow anvil pits on both faces, with five hammering facets around its circumference. It measures 103 mm by 90 mm by 59 mm.

Mano (1) — This fragment has one highly polished flat face and a hammering facet at one end.

Chisel (1) — The chisel is made from a fine-grained sedimentary flake. Grinding is restricted to the two sides, one face, and the bit edge, which is asymmetrical and even possesses a slight gouge depression. Length, maximum width, bit width, and maximum thickness are 69 mm, 21 mm, 15 mm, and 9 mm, respectively (Plate XII, fig. 24).

Palette (1) — The palette consists of an irregular slab of black shale 7 mm thick with some evidence of modification around the edges. One face possesses a slight polish.

Celt blank (1) — This large schistose fragment, which may represent an unfinished celt, was extensively battered along both major edges. It measures 186 mm by 72 mm by 40 mm.

Paintstones (34) — Twenty-six red ochre, one black hematite, and eight limonite nodules and pebbles were recovered (Plate XII, fig. 26) and are assumed to have functioned as paintstones.

NATIVE COPPER

Awls (9) — Eight of the awls are single pointed, and one is double pointed. All have rectangular cross-sections, except at the pointed end or ends, which are circular in cross-section. One specimen has twisted bark tied around it, leaving 8 mm of the point exposed. Length ranges from 37 mm to 143 mm, with a mean of 64.4 mm. Midsection width ranges from 3 mm to 6 mm, with a mean of 4.6 mm, and midsection thickness ranges from 2 mm to 4 mm, with a mean of 2.4 mm (Plate XII, figs. 18–20).

Knife (1) — A large curved knife with tang broken off is illustrated on Plate XII, fig. 17. The blade length from the tip to the beginning of the tang is 93 mm; the width at the base is 27 mm, and the mid-blade thickness is 3 mm. Lateral ridges are present.

Punch (1) — The end of this specimen is pointed in a blunted fashion, and the base possesses an incipient open socket. Length, base width, and thickness measurements are 39 mm, 9 mm, and 4 mm, respectively.

Wastage (17)—There are seventeen fragments of hammered-out copper which are regarded as wastage. One rectangular fragment possesses a point and may have functioned as an awl.

MISCELLANEOUS

Faunal analysis

Two mammals were identified from the limited faunal remains. These are beaver (*Castor canadensis*) and caribou (*Rangifer tarandus*).

Birchbark—A number of cut fragments of carbonized birchbark were found, but only one piece possesses lashing perforations.

Fossils (2)—Two small fossil brachiopods were found.

Beads (5)—Five cylindrical beads, which appear to have been made from trade copper, were recovered. One bead is wrapped around a leather thong. Lengths range from 10 mm to 11 mm, with a mean of 10.4 mm. Diameters range from 3 mm to 4 mm, with a mean of 3.6 mm (Plate XII, fig. 22).

Trade copper (2)—Two strips of what appear to be fragments from a trade kettle were found. These fragments and the cylindrical beads are probably intrusive from stratum II.

Varieties of stone materials used

Table 10 presents a rough segregation of the varieties of siliceous materials used in stratum III and the relative frequency of wastage to tools.

TABLE 10—Weights of detritus varieties and artifact classes

Material and class	Weight (gm)	%
Quartz cores.....	933	35.3
Quartz flakes.....	725	27.4
Nodular flint cores.....	61	2.3
Nodular flint flakes.....	371	14.0
Rosspoint flint core.....	11	0.4
Rosspoint flint flakes.....	36	1.4
Quartzite flakes.....	14	0.5
Miscellaneous flakes.....	27	1.0
Nodular flint arrowheads.....	16	0.6
Quartz arrowheads.....	4	0.2
Rosspoint flint arrowheads.....	3	0.1
Quartz scrapers.....	40	1.5
Nodular flint scrapers.....	88	3.2
Translucent Rosspoint flint scraper.....	11	0.4
Nodular flint linear flakes.....	13	0.5
Nodular flint spokeshave.....	2	0.1
Quartz small tools.....	2	0.1
Nodular flint small tools.....	2	0.1
Nodular flint wedges.....	215	8.1
Quartz wedges.....	68	2.6
Rosspoint flint wedges.....	7	0.3
Totals.....	2,649	100.1

The frequency of 82.3 per cent detritus to 17.8 per cent chipped stone tools is extremely close to the frequency of 80.6 to 19.5 obtained for the same analysis applied to stratum II in Table 4.

STRATUM IV

Stratum IV occurs as a thin living floor demarcated by a fairly consistent distribution of artifacts and firestone at depths of slightly less than two and a half feet below the surface. There is no soil distinction to separate the occupation zone from the predominantly sterile sand which occurs both above and below the stratum. Whereas stratum IV was clearly recognizable throughout the D-line excavation, it could not be traced as the excavations moved westward. The same situation existed for all the lower strata as well. Stratum IV and all the following strata lacked any depth of deposit, and the dotted lines on Figure 4 represent the thin living floors recognized from the depth occurrence of cultural material. No features were encountered in stratum IV other than two post moulds.

CERAMICS

RIM SHERDS (15) — The rim sherds from stratum IV belong to four categories, three of which are regarded as discrete ceramic traditions, and the other is regarded as a miscellaneous category. The three ceramic traditions are Stamped, Peninsular Woodland, and Push-pull.

Stamped rim sherds

Four classes of Stamped rim sherds are established on the basis of motif and technique.

Oblique linear stamp (2)—In both cases a row of oblique linear stamp was present on the collars, although in one instance a row of punctates occurred below the linear stamp. Both interiors are plain as is one lip; the other tip possesses linear stamped obliques. A single incipient pointed castellation is present, and the two collar heights are 18 mm and 20 mm. Rim profiles (Figure 5, III) are forms 41 and 45 (Plate XIII, fig. 6).

Oblique or vertical linear stamp above incised horizontals (2)—In both instances the oblique or vertical linear stamp occurs on the collar, and the incised horizontals occur on the neck. Both lip and interiors are plain, and collar heights are 10 mm and 14 mm. Rim profiles are forms 39 and 47 (Plate XIII, fig. 5).

Lateral chevron linear stamp on collar above oblique linear stamp (1)—This single rim possesses a plain interior, oblique linear stamp on the lip, profile form 39, and a collar height of 17 mm.

Two incised horizontals above vertical linear stamp on collar above one incised horizontal and a row of punctates (1)—This single specimen has a plain interior, encircling punctates on the lip, an incipient pointed castellation, profile form 42, and a collar height of 23 mm (Plate XIII, fig. 3).

Peninsular Woodland rim sherds

Three classes of Peninsular Woodland rims are established on the basis of decoration or the lack of decoration.

Plain (2)—Both rims lack exterior or interior surface treatment or decoration. One specimen, however, has a notched lip. Rim profiles are forms 15 and 20 (Plate XIII, fig. 1).

Finger incised (1)—Although a small fragment, sufficient remained of this rim to identify the broad, oblique grooves as probably being done with the end of a finger. Both the lip and the interior are plain, and an incipient pointed castellation is present. Rim profile is form 15.

Cord wrapped stick obliques on collar (1)—The oblique cord wrapped stick impressions are quite broad (c. 7 mm) and indistinct. Both lip and interior are plain; it would appear that multiple castellations were present on the vessel. Rim profile is form 31 (Plate XIII, fig. 2).

Push-pull rim sherds

Two classes are established on the basis of motif.

Horizontal rows of push-pull (2)—In both instances the technique is of the linear punctate variety. Both interiors are plain; one lip is notched; the other possesses encircling linear punctate. An inverted chevron occurs below an incipient pointed castellation on one of the rims, which also possesses a row of punctates below the collar. Rim forms are 53 and 60 with the collared rim having a height of 37 mm.

A row of oblique dragged stamp (1)—This sherd appears similar to the Stamped rims, except that the linear stamp has been dragged laterally after each impression. The lip possesses oblique linear stamp and a plain interior. Rim form is 61.

Miscellaneous rim sherds

These two rims are similar in nearly all respects. Both have incised horizontals above punctates on the exterior rim, plain interiors, and rim form 66. One specimen, however, has oblique linear stamp on the lip. Superficially the rims resemble the Ontario Horizontal pottery type, although the extension of the incising well below the incipient collar, the linear stamped lip, the erratic incising, and the irregular paste features do not allow the sherds to be classified as such (Plate XIII, fig. 4).

TABLE 11—*Rim sherd categories*

Category	<i>f</i>	%
Stamped.....	6	40.0
Peninsular Woodland.....	4	26.7
Push-pull.....	3	20.0
Miscellaneous.....	2	13.3
Totals.....	15	100.0

Body sherds (104)—The body sherds are segregated on the basis of surface treatment and these data are given in Table 12 along with thickness.

TABLE 12—*Body sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	39	37.5	4-12	7.5
Smoothed-over cord.....	36	34.6	3-9	5.8
Cord malleated.....	25	24.0	3-11	5.9
Fabric impressed.....	2	1.9	3-5	4.0
Check stamp.....	2	1.9	—	4.0
Totals.....	104	99.9		

Neck and shoulder sherds (15)—Only thirteen neck sherds and two shoulder sherds were identified in the sample. Ten of the neck sherds are plain, and the remaining three specimens are smoothed-over cord, cord malleated, and incised. Both shoulder sherds are plain and carinated; one possesses a row of punctates.

Children's vessels (8)—Three plain rim sherds, two with notched lips, and five body sherds are regarded as the work of children.

Pipes (3)—Two plain pipe elbow fragments and one crude stem with a rectanguloid cross-section were recovered.

STONE TOOLS

Arrowheads (2)—Both arrowheads are triangular in form. One is unifacially retouched; the other bears retouch only around the edges. A straight and a concave base are represented. The length of the complete specimen is 16 mm; the base width and thickness measurements for both are 15 mm and 4 mm, and 14 mm and 4 mm, respectively (Plate XIII, figs. 7, 8).

End scraper (1)—The single end scraper is plano-convex, unaltered on the ventral face, and has a scraping face at the end only. Length, width, and height of scraping face are 22 mm, 16 mm, and 5 mm, respectively (Plate XIII, fig. 9).

Side scraper (1)—Retouch with a 1-mm-high face extended for 26 mm along one edge of a 41-mm-long flake.

Wedges (3)—The three wedges range from 21 mm to 23 mm in length, with a mean of 22.3 mm, and range from 17 mm to 22 mm in width with a mean of 18.7 mm. Thickness ranges from 5 mm to 9 mm with a mean of 7.3 mm (Plate XIII, fig. 10).

Mano (1)—A circular cobble measuring 106 mm by 89 mm by 82 mm has a single flattened and polished face.

Hammerstone (1)—The single hammerstone consists of a natural cobble with a hammering facet at one end and an anvil pit on one face. Its measurements are 70 mm by 62 mm by 48 mm.

Abrader (1)—A fragment of a 16-mm-thick sandstone pebble possesses evidence of grinding on both faces (Plate XIII, fig. 11).

Palette (1)—This rectanguloid slab of black slate has been highly polished on one face and along one edge. It measures 107 mm by 57 mm by 12 mm (Plate XIII, fig. 12).

Paintstones (2)—Two large pebbles of red ochre are represented.

STRATUM V

Stratum V was represented by a thin living floor but was sufficiently consistent to be traced throughout the D-line and the eastern portions of the other excavation units. No features were encountered.

CERAMICS

RIM SHERDS (8)—The three categories of rim sherds from stratum V are Peninsular Woodland, Push-pull, and miscellaneous.

Peninsular Woodland rim sherds

Of the three specimens of Peninsular Woodland rims, two are plain and one is punctated.

Plain (2)—One of these specimens appears to have had some treatment of the collar, but the impressions were so obliterated by a final smoothing that they could not be identified. Both lips are decorated with one rim possessing vertical dragged stamp and the other having vertical linear stamp. The former specimen also has interior decoration which consists of vertical dragged stamp. Rim profiles are forms 26 and 29 (Plate XIV, fig. 2).

Punctated (1)—A single row of oblique punctates occurs below the lip and vertical punctates are present on the lip. The interior is plain, and the rim profile is form 15.

Push-pull rim sherds

The two Push-pull rim sheets possess different motifs.

Horizontal band of vertical dragged stamp on collar and oblique dragged stamp below (1)—Both the lip and the interior are decorated; the former has encircling punctates and the latter a band of oblique dragged stamp. An incipient castellation is present, although it is obscure in the photograph (Plate XIV, fig. 1). Rim profile is form 59, and collar height is 17 mm.

Oblique dragged stamp above horizontal push-pull above oblique dragged stamp (1)—The lip is decorated with vertical linear stamp, and the interior with a row of punctates. Rim form is 55, and collar height is 28 mm.

Miscellaneous rim sherds

The three miscellaneous rims relate to the horizontal incised rims of stratum IV, which superficially resemble the Ontario Horizontal pottery type.

Incised horizontals (3)—One sherd possesses a row of punctates below the horizontals, and another one is too fragmentary to examine the entire exterior motif. One lip is decorated with encircling incising, and the single decorated interior consists of oblique linear stamp. Only two specimens could

be described with reference to rim profile and collar height, and these data are forms 62 and 65, and 26 mm and 21 mm (Plate XIV, fig. 3).

Body sherds (54)—The body sherd analysis is given in Table 13.

TABLE 13—*Body sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Cord malleated.....	28	51.9	3-8	5.9
Plain.....	13	24.1	5-9	7.0
Smoothed-over cord.....	11	20.4	5-13	8.4
Ribbed paddle.....	2	3.7	—	7.0
Totals.....	54	100.1		

Three neck sherds and one shoulder sherd were recovered. The former consist of two plain sherds both with a row of punctates on what appears to be the beginning of a collar and a sharply everted smoothed-over cord sherd. The single shoulder sherd has a row of punctates on a plain surface, above which are zones filled with vertical incising.

STONE TOOLS

Arrowhead (1)—The single stone tool from stratum V consists of a large triangular arrowhead stemmed on one side and side-notched on the other (Plate XIV, fig. 4). The point is bifacially flaked and basally thinned. Length, base width, shoulder width, stem length, and thickness measurements are 52 mm, 19 mm, 19 mm, approximately 12 mm, and 6 mm, respectively.

STRATUM VI

Although stratum VI was very thin, a substantial scattering of firestone assisted in tracing it as a discrete stratum. No features were encountered.

CERAMICS

RIM SHERDS (4)—The four rim sherds from stratum VI are assignable to the following categories: Push-pull (2), Stamped (1), miscellaneous (1).

Push-pull rim sherds

Both of these sherds are decorated with horizontal rows of linear punctate, which approach a pseudo cord impression. One specimen also has vertical linear punctate crossing the horizontal motif. Lips are decorated with encircling linear punctate, one rim having two such rows. Both interiors are plain. Only one rim profile survived; it is form 57, and it has a collar height of 15 mm. Both sherds are castellated, one having an incipient pointed and the other a classic pointed castellation (Plate XIV, fig. 6).

Stamped rim sherd

This single specimen has oblique linear stamp below and on the lip and a plain interior. An incipient pointed castellation is present, and the rim profile is form 47 (Plate XIV, fig. 8).

Miscellaneous rim sherd

The miscellaneous rim has incised horizontals above a row of punctates, a plain interior, and oblique linear stamp on the lip. Rim profile is form 64, and collar height is 12 mm (Plate XIV, fig. 7).

Body sherds (18)—Six examples each of cord malleated, smoothed-over cord, and plain body sherds were recovered. Their respective thickness ranges and means are as follows: 5 mm to 6 mm (5.3 mm), 5 mm to 9 mm (7.8 mm), and 6 mm to 10 mm (7.6 mm).

Neck sherds (3)—The three neck sherds are represented by one each of plain, cord malleated, and opposed oblique incising.

Water-washed sherd (1)—One highly water-washed body sherd was found in stratum VI (Plate XIV, fig. 9).

STONE TOOLS

Side scraper (1)—A 21-mm-long, 1-mm-high scraping face occurs along one edge of a 29-mm-long flake (Plate XIV, fig. 5).

Paintstone (1)—A single red ochre pebble was recovered.

STRATUM VII

Stratum VII produced more material than the preceding stratum VI, but it was still quite thin. No features were encountered.

CERAMICS

Rim sherds (7)—The rim sherds from stratum VII belong to the three categories of Peninsular Woodland (3), Stamped (3), and Push-pull (1).

Peninsular Woodland rim sherds

The exterior treatment of these three sherds consists of a plain surface, one row of punctates, and a double row of punctates. Lips are decorated; two possess encircling punctates and the other lip is notched. Interiors are plain. The two surviving rim profiles are forms 26 and 33 (Plate XIV, figs. 13, 14).

Stamped rim sherds

All three specimens have oblique linear stamp on the collar with a row of punctates below one and a row of linear punctates approaching pseudo cording beneath another. Two lips are decorated with encircling punctates and oblique linear stamp. The two surviving interiors are plain, and the two observable profiles are forms 43 and 51 (Plate XIV, figs. 10, 12, and 15).

Push-pull rim sherd

This single specimen has horizontal rows of linear punctate above a row of oblique linear stamp on the exterior. The lip possesses oblique linear stamp and the interior and rim profile are destroyed.

Body sherds (41)—The body sherd analysis is given in Table 14.

TABLE 14—*Body sherd varieties*

Variety	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	24	58.5	5-3	7.5
Smoothed-over cord.....	10	24.4	4-14	6.9
Cord malleated.....	7	17.1	5-8	5.7
Totals.....	41	100.0		

Neck sherds (4)—All the neck sherds are plain.

Children's vessels (3)—One plain body sherd and two plain rim sherds are regarded as the products of children learning the ceramic art.

STONE TOOL

Abrader (1)—A single fragment of a large sandstone abrader 41 mm thick, possessing evidence of use along one face and one edge, was the only stone tool found.

NATIVE COPPER

Awl (1)—A copper awl with a single point, 71 mm long and 5 mm by 3 mm at its rectangular mid-section, was found (Plate XIV, fig. 11).

STRATUM VIII

Little can be said about stratum VIII except that the thin distribution of cultural debris occurring at a consistent depth allowed its demarcation in the otherwise sterile sand. No features were encountered.

CERAMICS

Rim sherds (2)—The first of these rims is decorated with oblique dragged stamp on the collar and has the same technique and motif on both the lip and the interior. Rim profile form is 56, and height is 23 mm. The second sherd possesses two horizontal rows of punctate on the exterior, a plain interior, and vertical linear stamp on the lip. The rim profile is destroyed. The first sherd would be classified under the Push-pull category, and the second sherd could be either Stamped or Peninsular Woodland since the rectangular punctates are approaching a linear stamp.

Body sherds (17)—Body sherd varieties are as follows: plain (7), smoothed-over cord (6), cord malleated (2), and ribbed paddle (2). Their respective thickness ranges and means are 6 mm to 9 mm (7.4 mm), 4 mm to 7 mm (5.8 mm), 6 mm to 11 mm (8.5 mm), and 3 to 4 mm (3.5 mm).

STONE TOOLS

Adze (1)—The adze is made from a rectanguloid cobble. It has been flaked at the poll, pecked at the sides and dorsal face, and ground on the asymmetrical bit edge. Length, poll width, bit width, and maximum thickness are 156 mm, 55 mm, 49 mm, and 45 mm, respectively.

Hammerstone (1)—This natural ovate cobble has three separate hammering faces and in terms of length, width, and thickness measures 58 mm, 52 mm, and 33 mm, respectively.

STRATUM IX

Stratum IX represents the final and earliest stratum of the Michipicoten site. Scattered sherds and firestone fragments occurred consistently at a depth of slightly over five feet below the surface and approximately eight inches above the water table. The only feature found was the reconstructible vessel shown in situ in Plate II, fig. 4 and reconstructed in Plate XV. A radiocarbon sample recovered from this stratum gave a reading of 850 years $\pm$ 60 (S-170) or A.D. 1100.

CERAMICS

Complete vessel (1)—This reconstructed vessel was decorated with vertical linear stamp on the collar and has the chevron motif under the seven incipient pointed castellations. Vertical linear stamp also appeared on the lip and the interior. Rim profile is form 41, and collar height is 24 mm. The entire surface of the vessel below the collar is covered with cord malleation, although some smoothing is apparent on the neck. Vessel height, orifice, and neck diameter are 33 cm, 25 cm, and 18 cm, respectively. This vessel belongs to the Stamped category.

Rim sherd (1)—A single plain Peninsular Woodland rim sherd with a notched lip and a plain interior was also recovered. Its rim profile is form 15.

Body sherds (16)—The sixteen body sherds belonged to the following varieties: cord malleated (14), plain (1), smoothed-over cord (1). The cord malleated sherds range from 4 mm to 8 mm in thickness with a mean of 4.8 mm, and the plain and smoothed-over cord sherds are 7 mm and 5 mm thick, respectively.

Comparisons

Sample size has limited effective comparisons to strata II, III, and IV, and only stratum III possessed what can be regarded as a good sample. Insufficient material was recovered from the lower strata to allow pertinent quantitative statements, and stratum I consisted almost entirely of European artifacts. In view of these discrepancies between the various occupation levels of the site, quantitative comparisons will be restricted to strata II, III, and IV, and only qualitative observations will be made with regard to the remaining strata.

Figures 6, 7, and 8 present the occurrence of the four ceramic traditions, the three dominant surface treatment techniques found on the body sherds, and the seven most common stone artifact classes, respectively. The occurrence of the four ceramic traditions in strata II, III, and IV suggests a decrease through time for the Stamped and Push-pull traditions, an increase followed by a slight decrease for the Peninsular Woodland tradition, and a sharp increase for the Huron-Petun tradition. Representative sherds of the first

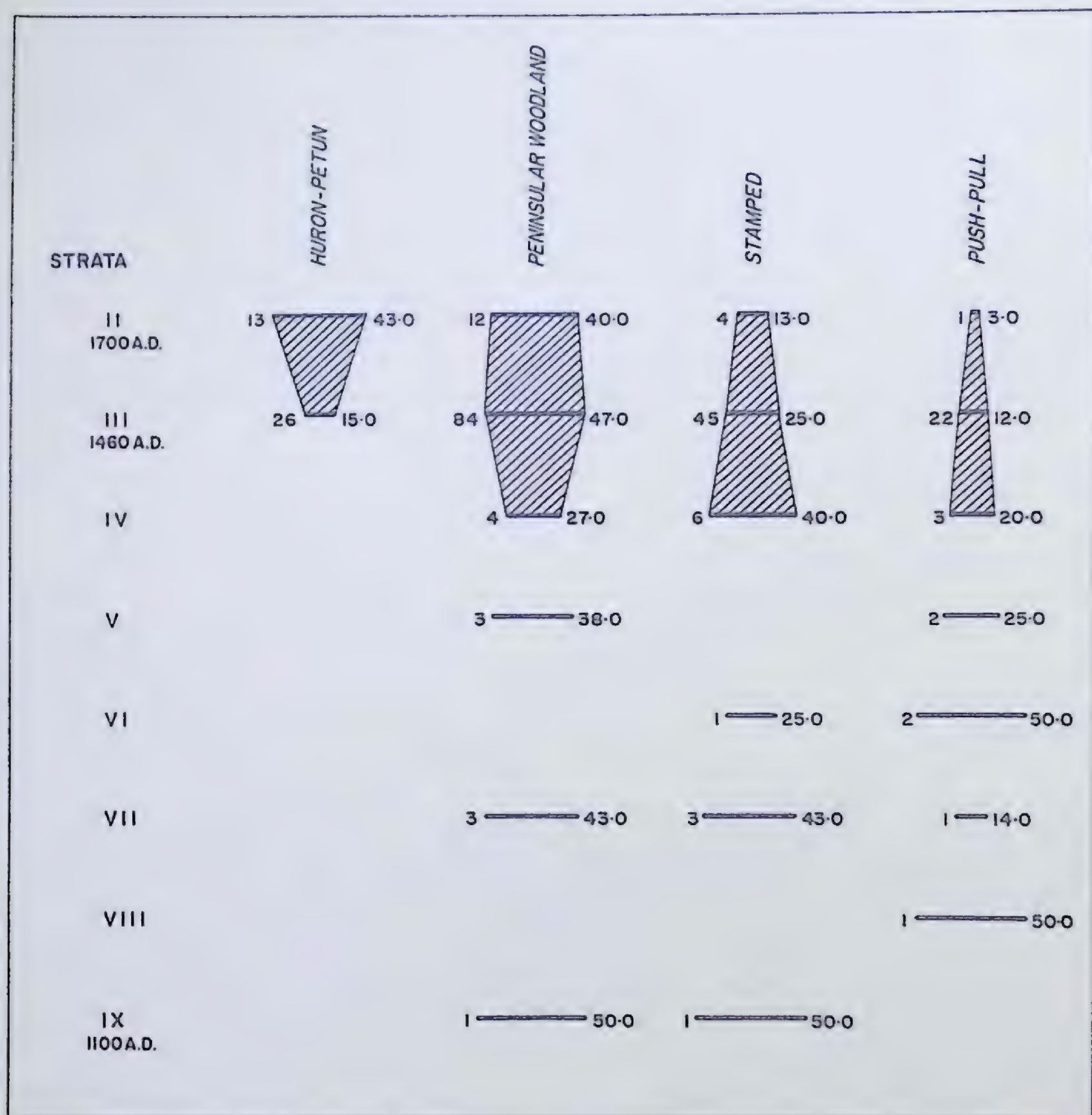


FIGURE 6—Stratigraphic occurrence of the four ceramic traditions excluding the miscellaneous category of rim sherds

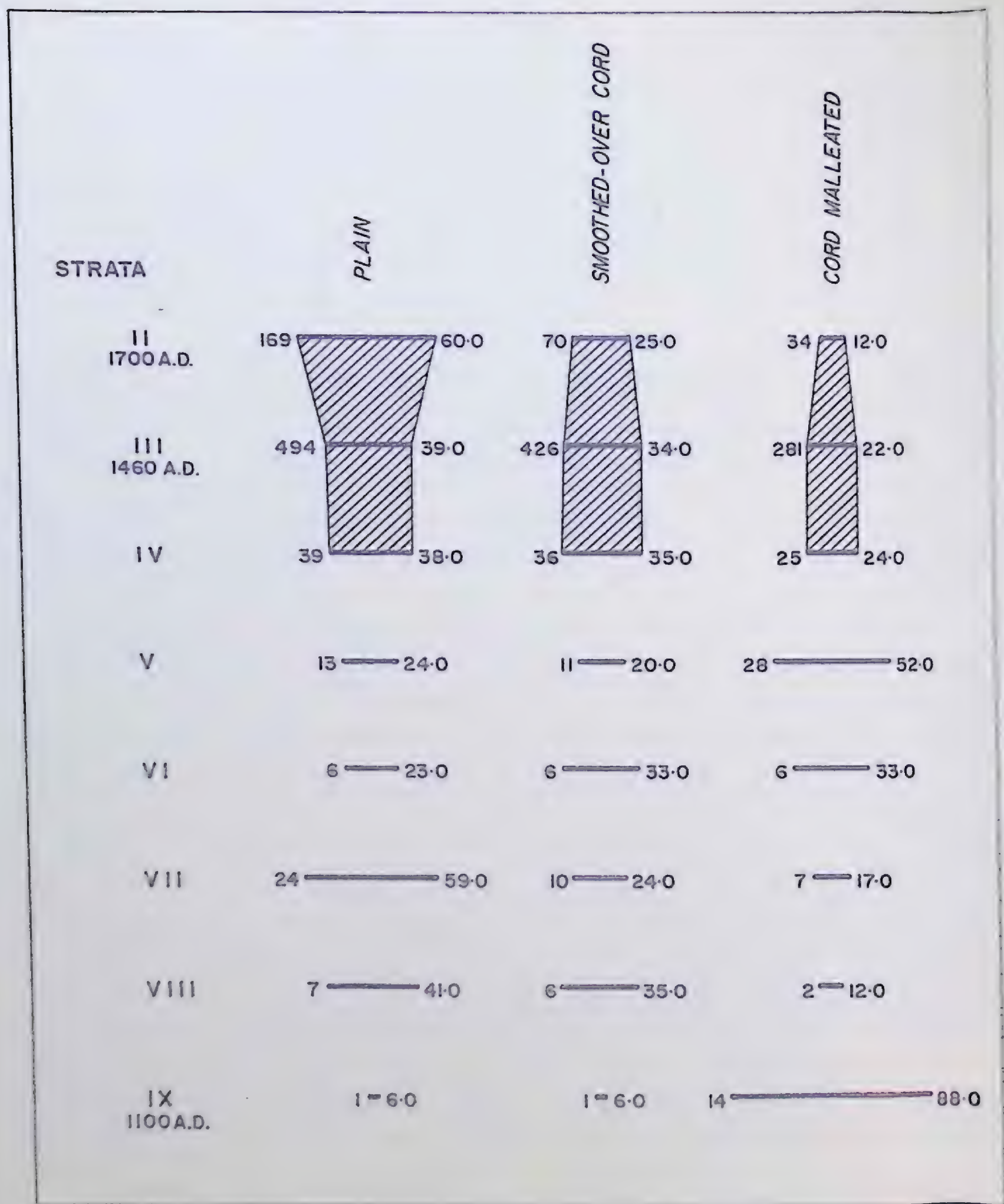


FIGURE 7—Stratigraphic occurrence of the three major body sherd surface treatment techniques

three traditions occur sporadically in most of the lower strata, but the absence of Huron-Petun ceramics from stratum IV is further reinforced by the total absence of these ceramics from all the lower strata. This situation strongly suggests that the penetration of Ontario Iroquois Tradition ceramics into the Michipicoten region was both late and intense, as opposed to the relatively continuous presence of the other three ceramic traditions.

The three major surface treatment techniques of the body sherds show a gradual decrease for the cord malleated and smoothed-over cord techniques and a gradual and then sudden increase for the plain technique running from stratum IV to stratum II. This sudden increase of the plain surface technique probably relates to a corresponding increase in the Huron-Petun ceramics. All three surface techniques are represented in the lower strata.

A combined percentage from strata II, III, and IV of 10 per cent or more determined which of the stone tool classes would be regarded as major. Of the resulting seven major stone tool classes, arrowheads show a steady decrease through time; scrapers increase; wedges increase and then decrease; abraders, manos, and hammerstones show a decrease followed by an increase; paintstones increase slightly from stratum IV to stratum III and are absent in stratum II. As only five specimens representing the seven major stone tool classes were recovered from the lower strata, no pertinent observations can be made.

Table 15 presents the occurrence of the pottery types or varieties grouped by ceramic tradition from strata II, III, IV.

The relative frequencies of the Huron-Petun branch pottery types in strata II and III are consistent with their frequencies on Huron-Petun components to the southeast, although the high incidence of the Lalonde High Collar pottery type in stratum II suggests that some time lag is involved. It should also be mentioned that three of the Black Necked specimens are early variants of the type which apparently evolved from the Middleport Oblique type. The Iroquois pipe types from the two strata are also consistent with the pottery type classifications. In the Peninsular Woodland ceramic tradition, the cord malleated, plain, and punctated varieties were dominant in strata II and III, and the plain variety shows a steady increase from stratum IV. The finger incised variety was limited to strata III and IV, suggesting that it might be one of the earlier varieties within the tradition. As is the case with the Peninsular Woodland ceramic tradition, the tentatively proposed Stamped ceramic tradition is a relatively unknown quantity in terms of ceramic trends. The obliques or verticals and the obliques or verticals above horizontals varieties, however, predominate throughout strata II, III, and IV, although the latter variety is secondary to the punctates above horizontals and criss-cross varieties in stratum III. Within the Push-pull ceramic tradition the horizontals and the obliques or opposed obliques varieties predominate and show a steady decrease in frequencies through time.

In addition to the general trends already noted with reference to the plain, smoothed-over cord, and cord malleated body sherds, the plain sherds decrease in mean thickness, the smoothed-over cord sherds increase, and the cord malleated sherds increase and then decrease in mean thickness. Also, the plain sherds are the thickest, and the cord malleated sherds the thinnest.

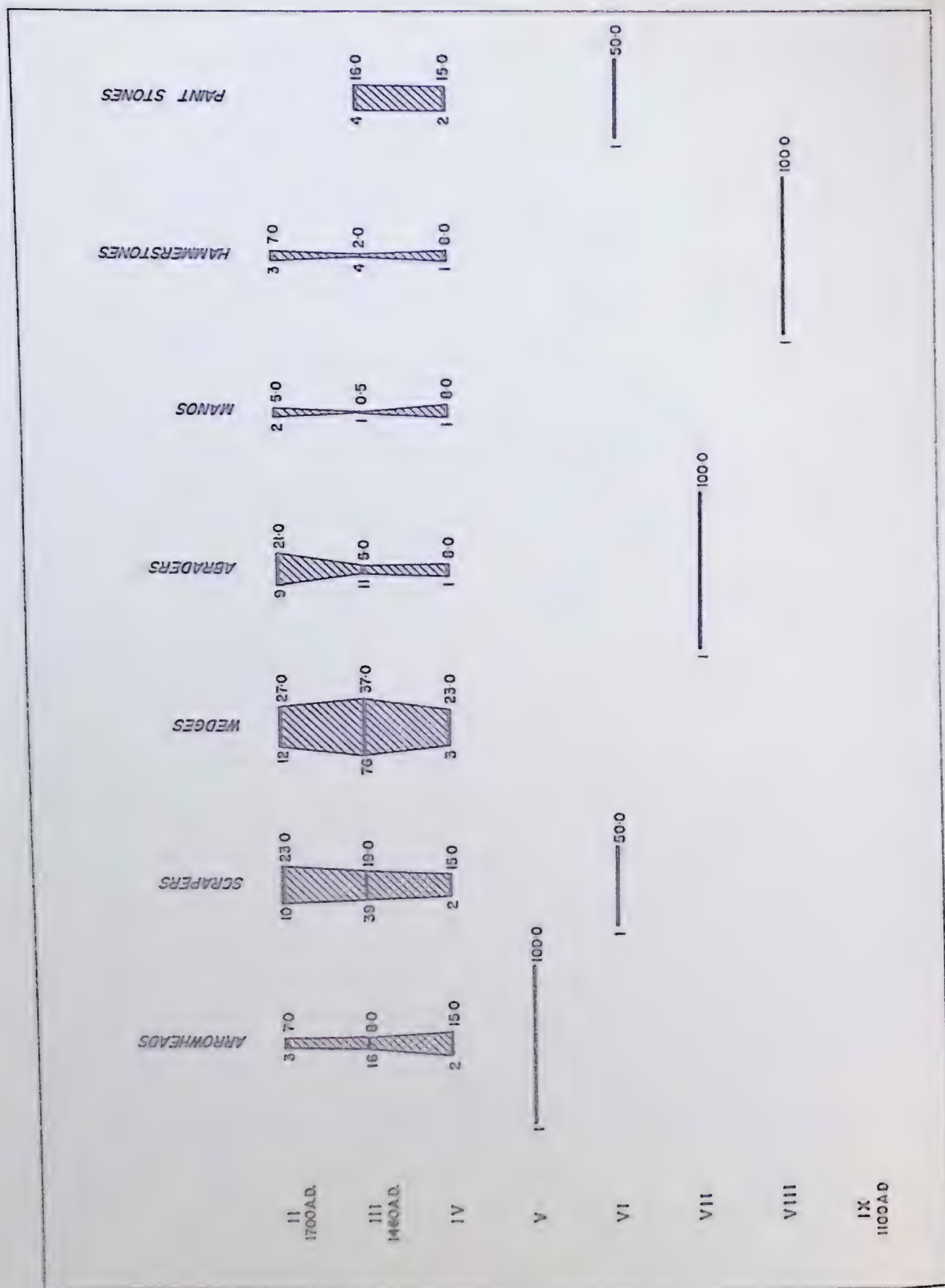


FIGURE 8.—Stratigraphic occurrence of the seven major stone tool varieties

These metrical variations among the three major body sherd varieties may reflect an association between ceramic traditions and surface treatment techniques. With reference to the minor body sherd surface techniques of ribbed paddle, net impressed, incised, multiple techniques, check stamp, fabric impressed, and scarified, the net impressed and incised varieties are only found in stratum II, the multiple techniques in strata II and III, the check stamp and fabric-impressed varieties in strata III and IV, the scarified variety in stratum III. The ribbed paddle variety, which occurs in both strata II and III, is the only minor surface treatment technique to be found below stratum IV.

Table 16 gives the frequency occurrence of the stone tools from strata II, III, and IV. In general, there is a decrease in arrowhead frequency through time; the simple triangular form is most prevalent with the notched triangular points being restricted to stratum III. Metrical trends show an increase in arrowhead length and basal width and a decrease in thickness. The percentage occurrence of minimal retouch on the points starting from stratum IV are 100 per cent, 56.3 per cent, and 66.6 per cent. Scrapers as a class increase through time; end scrapers and side scrapers dominate the series and possess an approximately equal representation in each stratum. Indeed, the other scraper varieties of ovate-acuminate, concave, and random were found only in stratum III. Metrical trends for the end scrapers indicate increases in length, width at the major scraping face, and height of the major scraping face. This sequence is only disrupted by the length measurement for the single end scraper from stratum IV, a situation that also applies to the increasing length of the scraping face of the side scrapers. Some of the other trends and presences or absences of the stone tool varieties from the three strata may possess time significance, but little can be said because of the limitations of the comparative data. Of importance, however, is the consistent scarcity of polished tools, excepting those which have acquired their polish through use. Indeed, this paucity of stone grinding as a technique for shaping tools appears to be characteristic of all the archaeological assemblages of the eastern Boreal Forest. Another characteristic held in common by strata II and III is the relationship of chipping detritus to chipped stone tools. These relationships, given in Tables 4 and 10, are 80.6 to 19.5 for stratum II, and 82.3 to 17.8 for stratum III. In both strata, the varieties of silicious materials recovered point to the exploitation of very local resources and the scarcity of exotic material.

Native copper items were limited to one awl and two finger rings for stratum II, and nine awls, a knife, and a punch from stratum III. The restriction of finger rings to the historic stratum suggests that they are the result of European influence in this particular instance.

Chart I gives the coefficients of similarity between strata II, III, and IV for the rim sherd types or varieties (i), the body surface treatment techniques (ii), and the stone tool varieties (iii). The resulting coefficients are very general expressions of relationship, but they serve the valuable function of reducing a large body of data to single coefficients that represent statements of relationship between any two components with reference to comparable bodies of data. Under the formulae (Brainerd 1951), identical components possess

TABLE 15—Occurrence of pottery types and varieties grouped by ceramic tradition for strata II, III, and IV

Huron-Petun		Peninsular Woodland		Stamped		Push-pull		Totals	
Lalonde High Collar		Cord Malleated		Obliques or Verticals		Horizontals		Horizontals	
Huron Incised		Plain		Obliques or Verticals above Horizontals		Horizontals		Horizontals	
Niagara Collared		Punctated		Punctates above Horizontals		Crisscross		Obliques and Opposed Obliques	
Sidey Notched		Decorated		Obliques or Verticals above Horizontals		Rows of Obliques		Opposed Obliques above Horizontals	
Black Necked		Fabric Impressed		Punctated		Punctated		Zigzag	
Pound Necked		Collared		Cord wrapped stick		Chevron above Obliques		Miscellaneous	
Ontario Horizontal		Finger Incised				Horizontals above Obliques above Horizontals and Punctates			
Warminster Horizontal									
Middleport Oblique									
II	f	5	5	3	1	27	13	1	30
	%	20.0	17.0	10.0	3.0	15.0	3.0	3.0	100.0
III	f	5	29	27	3	2	7	7	179
	%	3.0	16.0	15.0	2.0	2.0	4.0	4.0	102.0
IV	f	-	2	2	2	1	1	2	15
	%	-	13.0	13.0	13.0	7.0	7.0	13.0	100.0

TABLE 16—Occurrence of stone tools from strata II, III, and IV

	Arrowheads		Scrapers					Spokeshave	Small Tools	Wedges	Linear Flakes	Abraders	Manos	Metates	Anvil Stones	Mano-Anvil-Hammer	Polishing Stones	Hammerstones	Palette	Paintstones	Stone Pipe	Spall-Chopper	Chisel	Celt Blank	
	Triangular	Notched	End	Ovate-Accuminate	Side	Concave	Random																		
f II %	3 7.0	-	5 11.0	-	5 11.0	-	-	1 2.0	2 5.0	12 27.0	-	9 21.0	2 5.0	-	1 2.0	-	-	3 7.0	-	-	1 2.0	-	-	-	44 100.0
f III %	11 5.0	5 2.0	13 6.0	2 1.0	12 6.0	4 2.0	8 4.0	1 .5	8 4.0	76 37.0	7 3.0	11 5.0	1 .5	2 1.0	-	1 .5	2 1.0	4 2.0	1 .5	35 16.0	-	1 .5	1 .5	1 207 99.0	
f IV %	2 15.0	-	1 8.0	-	1 8.0	-	-	-	-	3 23.0	-	1 8.0	1 8.0	-	-	-	-	1 8.0	1 8.0	2 15.0	-	-	-	13 101.0	

a coefficient of 200, and completely different components have a coefficient of 0. The coefficients are used as relative indicators of relationship and are regarded definitely as comparative conveniences and not mathematical absolutes.

CHART I—*Coefficients of similarity for strata II, III, and IV*

	Stratum II			Stratum III			Stratum IV		
	i	ii	iii	i	ii	iii	i	ii	iii
Stratum II	—	—	—	120	156	115	58	148	131
Stratum III	120	156	115	—	—	—	80	192	126
Stratum IV	58	148	131	80	192	126	—	—	—

- i — Coefficients derived from the comparisons of rim sherd types and varieties.
- ii — Coefficients derived from the comparison of body sherd surface treatment techniques.
- iii — Coefficients derived from the comparison of stone tool varieties.

By taking the combined coefficient figures between any two strata, it can be seen that stratum III is most closely related to stratum IV, although its relationship to stratum II is almost of the same magnitude. As might be expected, the lowest expression of relationship is between strata II and IV. The highest coefficients of similarity pertain to the body sherd surface treatment techniques followed by the stone tool varieties, and the collectively lowest coefficients relate to the rim sherd types and varieties. More specifically, the coefficients for both the rim sherds and the body sherds are lowest between strata II and IV, and the coefficient for the stone tools is highest with reference to these two strata and thus deviates from the expected pattern. The coefficients for strata II and III are highest for the body sherds and are next highest for the rim sherds which are followed closely by the coefficient for the stone tools. With reference to strata III and IV the coefficients in descending order relate to the body sherds, the stone tools, and the rim sherds. A major qualitative discontinuity, represented by the appearance of Huron-Petun ceramics in stratum III, is associated with the quantitative discontinuity of the stone tools in the same stratum when compared to strata II and IV. It is difficult to determine whether this disruption in stratum III of the stone tool trends is due to inadequate samples or to the initial impact of a new source of influence upon the occupants of the component.

Comparisons of strata II and III to other stratified Late Woodland sites along the north shores of Lake Huron and Lake Superior have already been made (Wright 1965), and therefore the findings will be summarized rather than repeated in detail. The two key sites used in the earlier comparison are the Pic River site and the Shebishikong site, to the west and east of Michipicoten respectively. At the former site, three components, two prehistoric and one historic, occurred as stratified deposits. The earliest occupation, stratum III, has been radiocarbon dated at A.D. 950 ± 80 (GSC-85),¹ and the latest deposit, stratum I, has been dated between the latter half of the 17th

¹This date was erroneously given as A.D. 962 ± 80 (Wright 1965: 205).

century and the first half of the 18th century on the basis of European trade items. At the Shebishikong site on Georgian Bay, only the historic stratum I produced sufficient material to be used for comparisons. This occupation is regarded as being roughly contemporaneous with stratum I of the Pic River site and stratum II of the Michipicoten site.

The six components—strata II and III of the Michipicoten site; strata I, II, and III of the Pic River site; and stratum I of the Shebishikong site—were used in the earlier study in an attempt to demonstrate the practicability of tracing regional Ojibwa culture history by the direct historical approach. Four basic proposals were made, and these are as follows:

1. ethnohistorical records allow the designation of certain components in the Upper Great Lakes region under the broad term 'Ojibwa' but severely handicap more specific identification;
2. the ceramics recovered from historic Ojibwa components are the product of borrowings from more than one ceramic tradition and, thus, cannot be used consistently in the traditional manner for establishing either spatial or temporal relationships;
3. the stone tool assemblage does not show the same spatial and temporal inconsistencies apparent in the ceramics, thus suggesting that it represents an indigenous portion of Ojibwa material culture and, thus, a more consistent category than ceramics from which to establish spatial and temporal relationships;
4. the direct historical approach is applicable using the historic Ojibwa components as a base from which to extend Ojibwa culture history back in time (Wright 1965: 215–216).

The ethnohistoric records (Blair 1911–12; Kinietz 1940; Thwaites 1896–1901, 1905) indicate that the north shores of the Upper Great Lakes were occupied by Algonkian-speaking peoples, and specific references have been made concerning the occupation of the Michipicoten site (Henry 1901) and the Pic River site (Long 1791) by Algonkian speakers. In view of the host of names which have been used in referring to the occupants of the region it was deemed advisable to designate them under the inclusive term 'Ojibwa.' This was done with the awareness that the Ojibwa are not a cohesive 'tribe' but rather a grouping of independent bands which show a closer relationship to each other than they do to the Cree, Algonkin, and Montagnais–Naskapi, which represent similar clusterings of related bands (Jenness 1955). Under the circumstances, it can be expected that a number of archaeological manifestations will eventually be attributed to the Ojibwa, and therefore it is emphasized that the present observations pertain only to the Ojibwa occupying the north shores of the Upper Great Lakes.

Pottery vessels with their numerous attributes are generally the best single artifact category for tracing time and space relationships. The evidence from the sites under consideration, however, strongly suggests that ceramics are not an indigenous part of Ojibwa material culture. Both the mixture of ceramic traditions within single components and the generally greater frequency of stone tools to rim sherds suggest that the ceramics are a borrowed

trait. The evidence further indicates that the various ceramic traditions are discontinuously distributed through space and can also be discontinuous through time at any one site. Although such inconsistencies do not deny the value of ceramics in arriving at certain varieties of time-space information, they do create a situation whereby ceramics cannot be used effectively as the sole means for establishing broad time-space relationships. For example, Huron-Petun ceramics occurred at Shebishikong and in both strata II and III of the Michipicoten site but were totally absent from stratum I of the Pic River site. Similarly, Blackduck focus ceramics were present in all the components of the Shebishikong and Pic River sites but were missing from the Michipicoten site. Both the Stamped and Peninsular Woodland ceramics were limited to the Michipicoten site, although two of the miscellaneous sherds from stratum I of the Shebishikong site may possibly be assignable to the Peninsular Woodland rim category. Only the Push-pull rim category or tradition was found in all the historic components of the three sites, and although these ceramics had a relatively continuous occurrence through time at the Michipicoten site, they only occurred in stratum I of the Pic River site.

Next to the ceramics the only other class of artifacts that is relatively abundant is the stone tools. In comparing the Michipicoten, the Pic River, and the Shebishikong sites, the stone tools revealed closer and more continuous relationships than the ceramics, thereby suggesting that the former class of artifacts represents an indigenous part of Ojibwa material culture and therefore a more effective medium for tracing broad spatial and temporal trends. Despite the limited number of attributes involved in the stone tools, they assisted in maintaining continuities through both time and space which otherwise would not have been apparent if the rim sherd analysis alone had been relied upon. In short, if a single medium is to be relied upon for tracing Ojibwa culture history along the north shore of the Upper Great Lakes, then the stone tool class would appear to be the most promising medium. Actually the total archaeological record must be used in any reconstruction—the emphasis of stone tools over ceramics is one of degree and has, perhaps, been overstated in an effort to point out some of the limitations to which the usefulness of ceramics is not normally subject.

The comparison of the Shebishikong, Pic River, and Michipicoten sites demonstrates the feasibility of tracing Ojibwa culture history along the north shores of Lake Huron and Lake Superior. Of particular value to the direct historic approach are the Michipicoten and Pic River sites with their sequential occupations covering a considerable period of time. Additional stratified and single components are needed, however, before the assumed spatial patterns and temporal sequences involved in the cultural development of a portion of the Ojibwa can be convincingly outlined. It is for this reason that the present report has been more descriptive than interpretive. At this stage of investigation it is more a matter of laying bricks than building houses.

To avoid duplication, the comparative data—the basis for the preceding comments on Ojibwa culture history along the north shores of the Upper Great Lakes—have not been included in this paper. The reader concerned with these data is referred to an earlier paper (Wright 1965).

Conclusions

The Michipicoten site possesses a relatively unbroken sequence of occupation beginning at approximately A.D. 1100 and lasting until well into the historic period. Throughout this lengthy period of occupation a local character maintains itself. This suggests that the accumulated debris is the product of a single indigenous population developing through time. Although aboriginal items of material culture are present for roughly 700 years, the small quantity of material from the earlier strata severely limits interpretations for the first 300 years of the sequence. From the first occupation of the site until the discontinuance of pottery manufacturing in the historic period, more than one ceramic tradition is represented in each component. The three most persistent ceramic traditions through time are Peninsular Woodland, Stamped, and Push-pull, and all three are regarded as having been derived from the south in the states of Michigan and Wisconsin. In the majority of their attributes, the Peninsular Woodland ceramics differ markedly from the other ceramic traditions present at the site and appear to have developed as a product of Upper Mississippi ceramic influences upon Woodland groups. Similar ceramics have been recovered from an early historic Fox village in eastern Wisconsin (Wittry 1963), and in general are distributed throughout the upper peninsula of Michigan, the western half of the lower peninsula of the same state, and coastal Wisconsin (Quimby 1960). The Push-pull and Stamped ceramic traditions or tradition, as the case may be, also appear to have stemmed from a southern source. In the Younge Tradition of southeastern Michigan the pottery types Vase Tool-impressed and the push-and-pull variant of Macomb Linear (Fitting 1965: 155-157) appear to equate respectively with the Stamped and Push-pull rim sherd categories of this paper. The association of the two ceramics in the Younge Tradition strengthens the earlier stated impression that the Push-pull and Stamped ceramic traditions may be related. This impression of an association between the two ceramic styles, however, does not appear to be supported by the findings at the Juntunen site on Bois Blanc Island in the Straits of Mackinac, northern Michigan (McPherron 1963, n.d.). At this multicomponent site the "second readily distinguishable ware is characterized by collars, castellations, and a preponderance of the push-and-pull decorative technique" (McPherron 1963: 573-574). No mention is made of an associated pottery characterized by simple linear stamp motifs and collars. The Push-pull pottery occurs late in the Juntunen site sequence, where it has been estimated to have been present by approximately A.D. 1300. McPherron suggests that the Push-pull pottery possesses its closest parallels with the Barrie-Uren pottery of Southern Ontario. Although a number of ceramic attribute equivalents exist between certain Late Woodland ceramics in Michigan and the ceramics of the Ontario Iroquois Tradition, it is my opinion that the parallels are of such a general nature that proposals of origin are placed in a very hazardous position. In short, I cannot see a direct relationship between the Ontario Iroquois Tradition ceramics of Southern Ontario and the Push-pull ceramics of Michigan and Northern Ontario. The final ceramic tradition found on the Michipicoten site is assignable to the Northern division of the Huron-Petun branch of the

Ontario Iroquois Tradition (Wright 1966a). These ceramics appear first in the mid-15th century occupation of stratum III and gain appreciably in popularity during the contact period represented by stratum II. It therefore appears that throughout its occupation the Michipicoten site was subjected to continuous influences originating in Michigan and Wisconsin. During the mid-15th century southeastern influence from an Iroquois group also appeared, and these influences maintained themselves until the replacement of aboriginal material culture by European substitutes or equivalents. Paradoxically, no western ceramic influences, represented by the Blackduck or Manitoba focus (Wilford 1955; MacNeish 1958) and the Selkirk focus (MacNeish 1958), appear at the Michipicoten site throughout its entire period of occupation. The paradox lies in the occurrence of Blackduck ceramics in the Pic River site some 80 miles to the west and in the Shebishikong site approximately 275 miles to the southeast. Indeed, only 50 miles to the south of the Michipicoten site, excavations at the mouth of the Montreal River produced Huron-Petun branch, Peninsular Woodland, and Blackduck focus ceramics with associated European trade goods in what is regarded as a historic Ojibwa component. No explanation can be offered for the absence of Blackduck ceramics at the Michipicoten site.

The varieties of stone tools at the Michipicoten site are fairly consistent through time, although the samples from below stratum IV are too small to be given any weight. Arrowheads, scrapers, and wedges dominate the sequence and, with the exception of the wedges, possess significant quantitative and qualitative trends through time. It is particularly in the comparisons with the components of the Pic River and Shebishikong sites that the stone tools maintain a continuity of relationship which is otherwise disrupted by the rim sherd analysis. The exploitation of local sources of silicious stone and the limited amount of exotic materials found on all three sites suggest that trade relationships were not extensively developed. A characteristic of the Michipicoten site, however, which is not shared with the other sites, is the frequency of heavy stone tools such as abraders, manos, and hammerstones.

The local character of the stone assemblage at the Michipicoten site stands in marked contrast to the rather cavalier mixture of different ceramic traditions. In a paper presented at the Iroquois Conference, Glen Falls, New York, 1965, Dr. Alan McPherron applied the studies of Owen (1965) and Deetz (1965) to the problems of interpreting the Juntunen site. The portion of his paper pertinent to the present study maintains that in areas of low population density, exogamous patrilocal bands frequently acquire females from considerable distances with the result that the local male culture is stable in contrast to the introduced female culture. If it is accepted that pottery manufacturing is a trait of female culture, then the mixture of ceramic traditions at the Michipicoten site and other sites along the north shores of the Upper Great Lakes may simply be a reflection of female mobility in response to patrilocal residence requirements. At the present time this would certainly appear to be the most logical explanation of a condition which has existed along the north shore of Lake Superior since, at least, the 10th century. It would also explain why ceramics cannot be used in the traditional manner

for tracing continuous time and space relationships, particularly the latter. If it is correct to assume that the stone tools represent an indigenous element of the native material culture while the ceramics are an introduced element, then the problems involved in tracing Ojibwa culture history are greatly increased. The situation seen at the Michipicoten site, however, indicates that the problems are not insurmountable and that with the increase in data, especially from stratified sites, it will eventually be possible to establish effective chronologies. It is further anticipated that the chronologies will each possess a local character but that, collectively, they will reflect the gradual development of related populations leading to the independent bands of the historic Ojibwa along the north shores of the Upper Great Lakes.

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PLATES I-XVI
THE MICHIPICOTEN SITE

PLATE I

Bank cut face. Dr. G. F. MacDonald is standing at water level and pointing to stratum III.



PLATE II

- Fig.*
- 1 Downriver view of the Michipicoten site
 - 2 Typical hearth consisting of scattered firestones
 - 3 Excavation looking north with unit A in the foreground
 - 4 Reconstructed vessel illustrated on Plate XV in situ at a depth of five feet. Post mould cross-sections in profile.

PLATE II



PLATE III
(1/2 natural size)

Stratum I

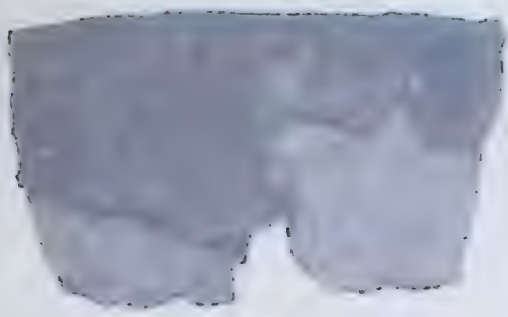
- Fig.*
- | | |
|------|---|
| 1 | Iron strike-a-light |
| 2, 3 | Kaolin pipe fragments |
| 4 | Brass ramrod ferrule |
| 5 | Lead netsinker |
| 6, 7 | Iron knives |
| 8 | Cut brass kettle fragment—modified into a scraper along edges |
| 9 | Cut lead sheet |
| 10 | French gun flint |
| 11 | Hammerstone |
| 12 | Plain body sherd |
| 13 | Wedge |
| 14 | Tip of a bone point or awl |



PLATE IV
($\frac{1}{2}$ natural size)

Stratum II

- Fig.*
- | | |
|-----|---|
| 1 | Huron-Petun branch rim (Huron Incised) |
| 2 | Huron-Petun branch rim (Lalonde High Collar) |
| 3 | Stamped rim |
| 4-8 | Peninsular Woodland rims |
| 9 | Push-pull rim |
| 10 | Acorn ring pipe (Iroquois) |
| 11 | Etched catlinite pipe with metal band |
| 12 | Crude, flat-lipped pipe with encircling punctates on lip (non-Iroquois) |
| 13 | Plain trumpet pipe bowl fragment (Iroquois) |



1



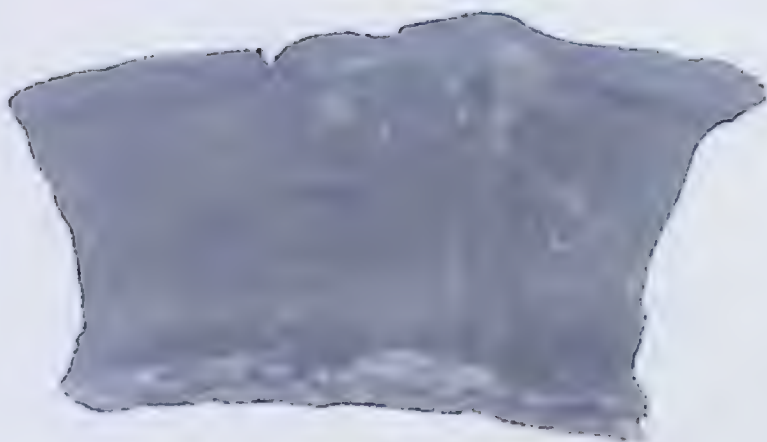
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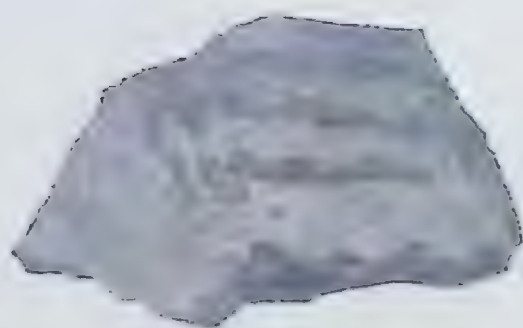
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7



8



9



10



11



12



13

PLATE V
(1/2 natural size)

Stratum II

- Fig.*
- | | |
|--------|---|
| 1 | Two rolled brass awls |
| 2 | Brass strips (beads) wrapped around a leather thong |
| 3 | Cut brass triangle |
| 4 | Lead pendant |
| 5 | Blue glass seed beads |
| 6 | English gun flint |
| 7, 8 | Triangular arrowheads |
| 9, 10 | End scrapers |
| 11, 12 | Side scrapers |
| 13 | Spokeshave |
| 14 | Small tool |
| 15-17 | Wedges |
| 18 | Native copper awl |
| 19 | Native copper finger ring |
| 20 | Ball of pitch |
| 21 | Anvil stone |
| 22 | Hammerstone |
| 23 | Abrader fragment |

PLATE V



PLATE VI
(1/2 natural size)

Stratum III
Huron-Petun branch rims

- Fig.*
1, 2 Lalonde High Collar
3 Huron Incised
4 Sidey Notched
5 Niagara Collared
6 Warminster Horizontal
7 Black Necked
8 Ontario Horizontal
9 Pound Necked

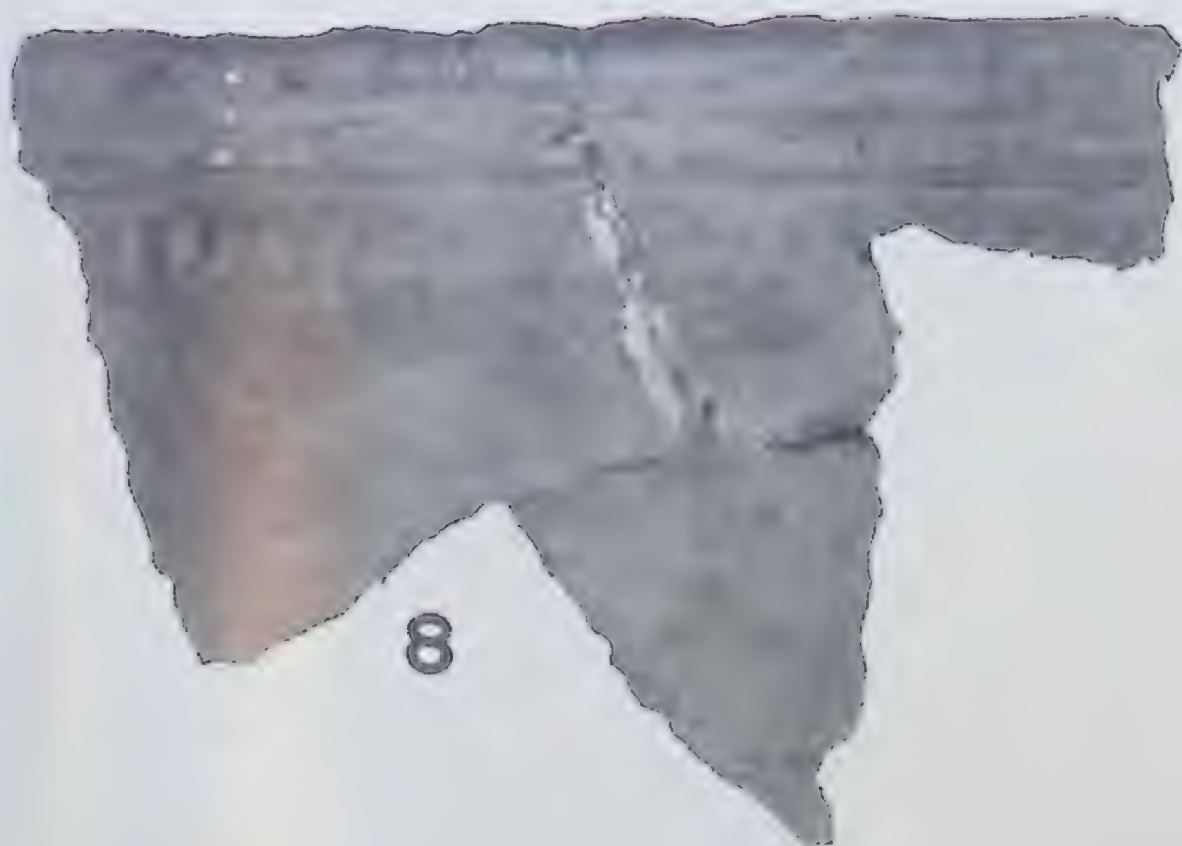
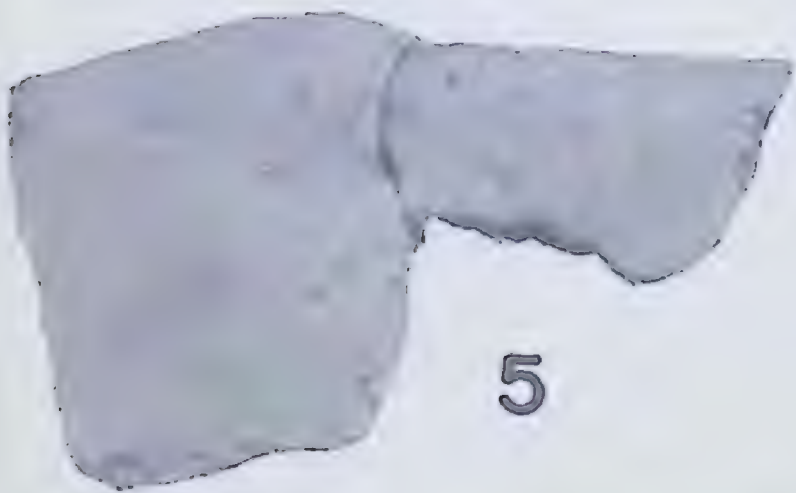
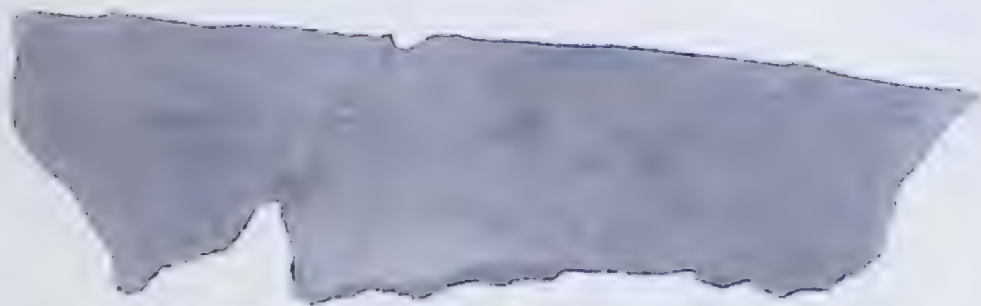


PLATE VII
($\frac{1}{2}$ natural size)

Stratum III
Peninsular Woodland rims

PLATE VII



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PLATE VIII
($\frac{1}{2}$ natural size)

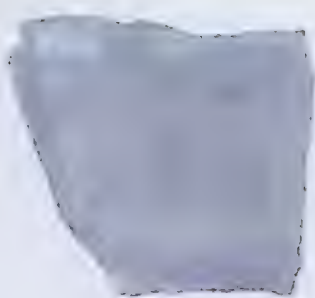
Stratum III

- Fig.*
1-6 Peninsular Woodland rims
7-11 Push-pull rims

PLATE VIII



1



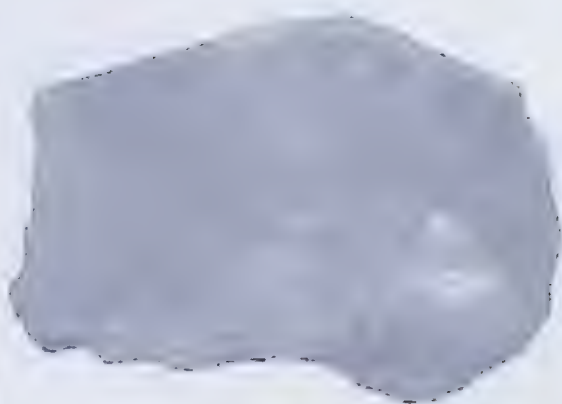
2



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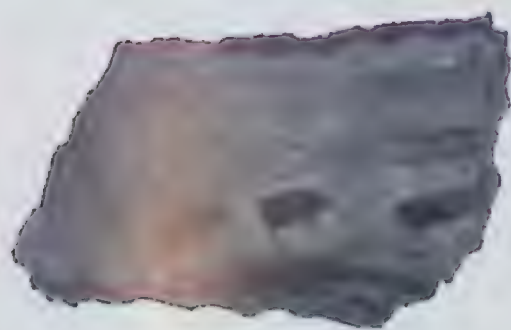
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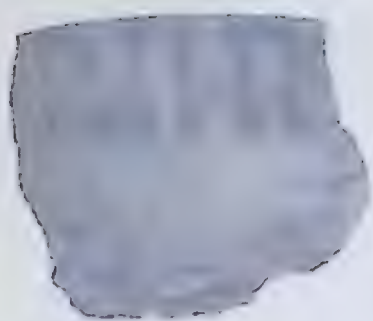
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PLATE IX
(1/2 natural size)

Stratum III

Fig.
1-10 Stamped rims
11, 12 Miscellaneous rims

PLATE IX



1



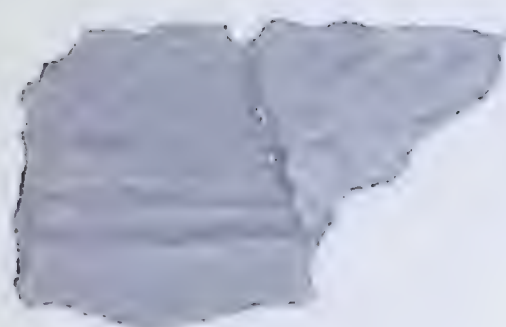
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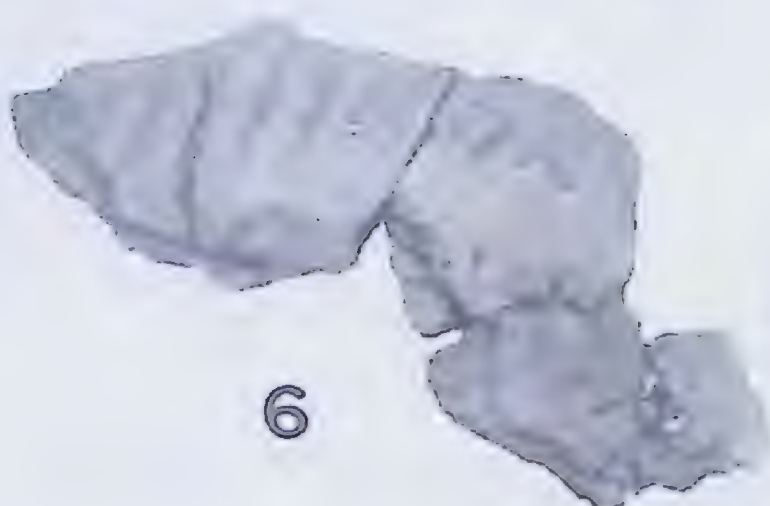
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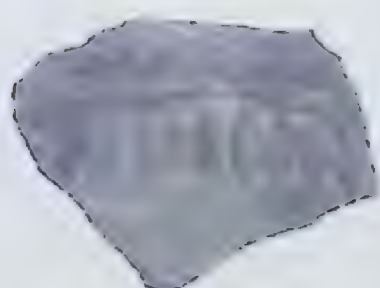
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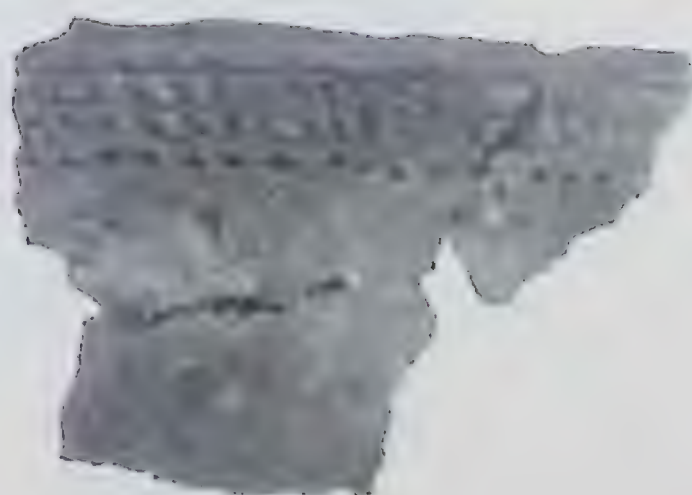
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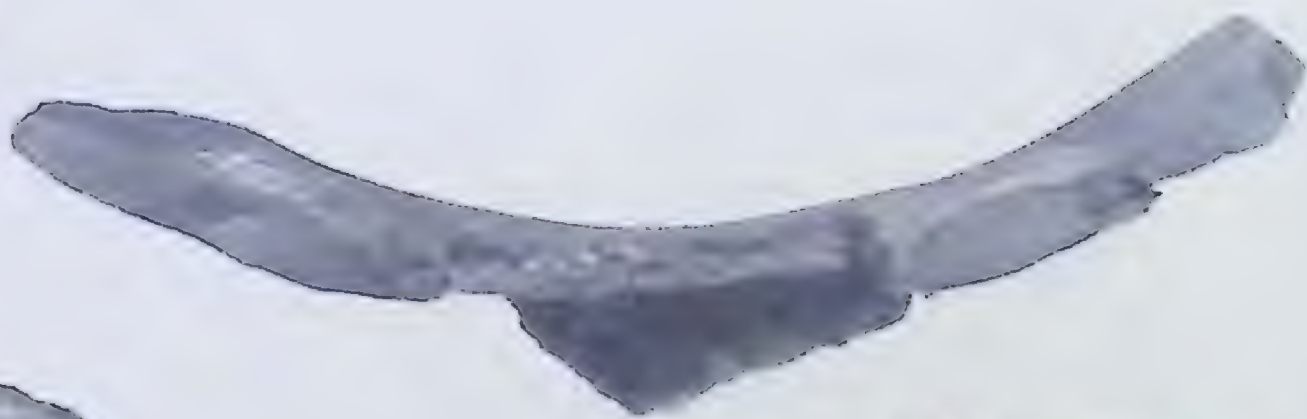
PLATE X
($\frac{1}{2}$ natural size)

Stratum III

- Fig.*
1 Push-pull rim
2 Lip treatment of a Peninsular Woodland vessel
3, 5 Decorated neck sherds
4 Decorated shoulder sherd



1



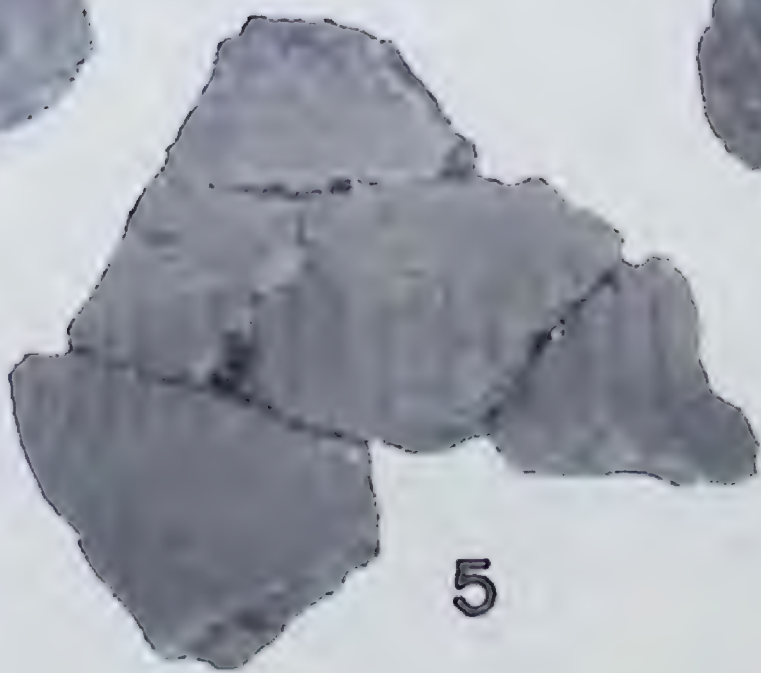
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PLATE XI
(1/2 natural size)

Stratum III

- Fig.*
- | | |
|-------|---|
| 1 | Ring vasiform pipe bowl (Iroquois) |
| 2 | Plain trumpet pipe bowl (Iroquois) |
| 3 | Iroquois ring pipe bowl (Iroquois) |
| 4 | Ring conical pipe bowl (Iroquois) |
| 5, 6 | Crude rectangular and conical pipe bowls (non-Iroquois) |
| 7 | Painted (red) pipe stem |
| 8-11 | Triangular arrowheads |
| 12-14 | Notched triangular arrowheads |
| 15-18 | End scrapers |
| 19-21 | Side scrapers |
| 22 | Ovate-acuminate end scraper |
| 23 | Concave side scraper |
| 24 | Spokeshave |
| 25 | Random flake scraper |
| 26-29 | Small tools |



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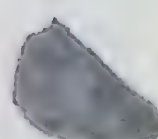
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PLATE XII
($\frac{1}{2}$ natural size)

Stratum III

<i>Fig.</i>	
1-4	Linear flakes
5	Core
6-16	Wedges
17	Native copper knife
18	Native copper awl wrapped in bark cordage
19, 20	Native copper awls
21	Native copper punch
22	Native copper cylindrical beads
23	Abrader which has also been used as an anvil stone
24	Chisel
25	Polishing stone
26	Red ochre nodules
27	Hammerstone

PLATE XII

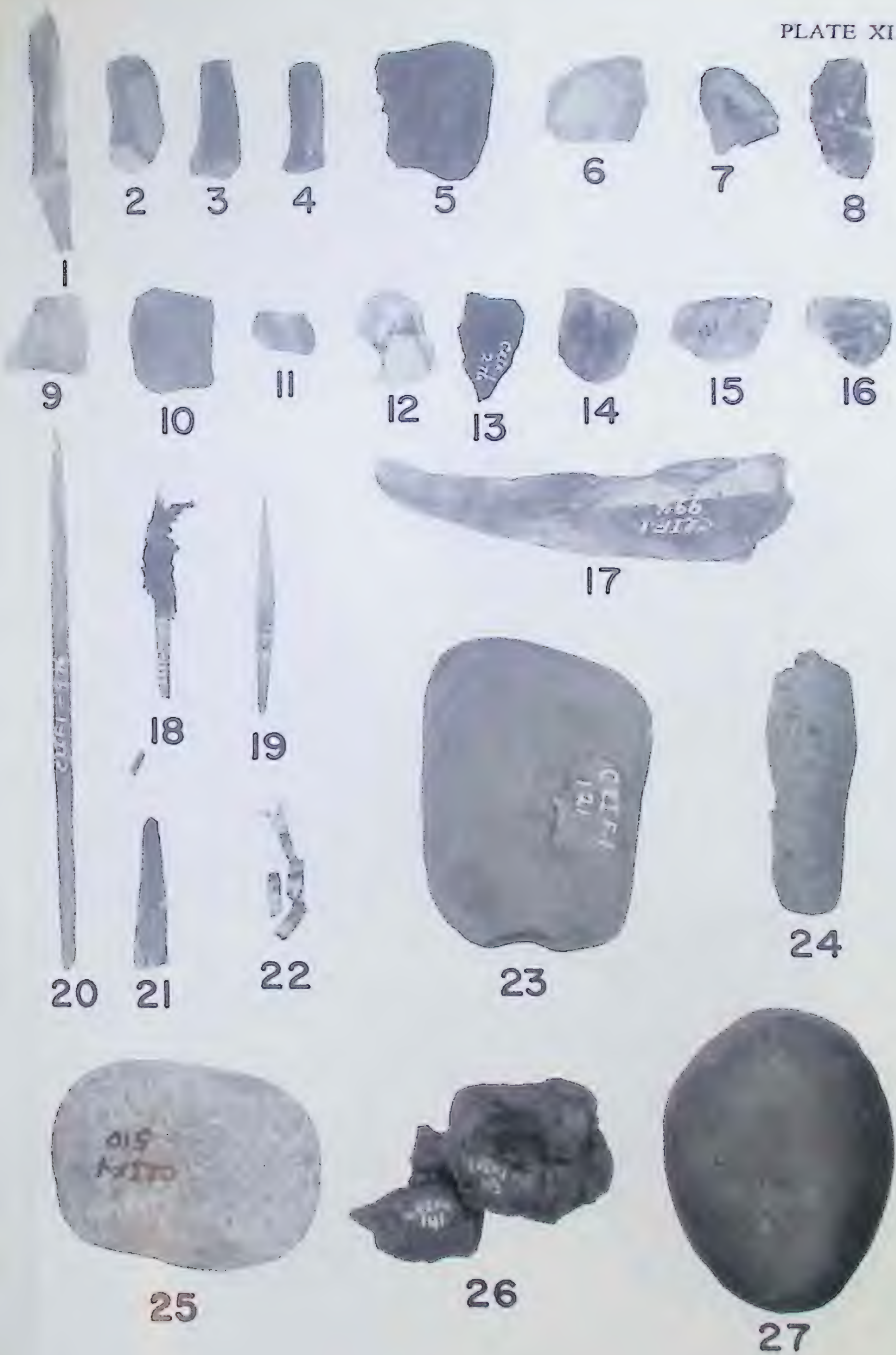
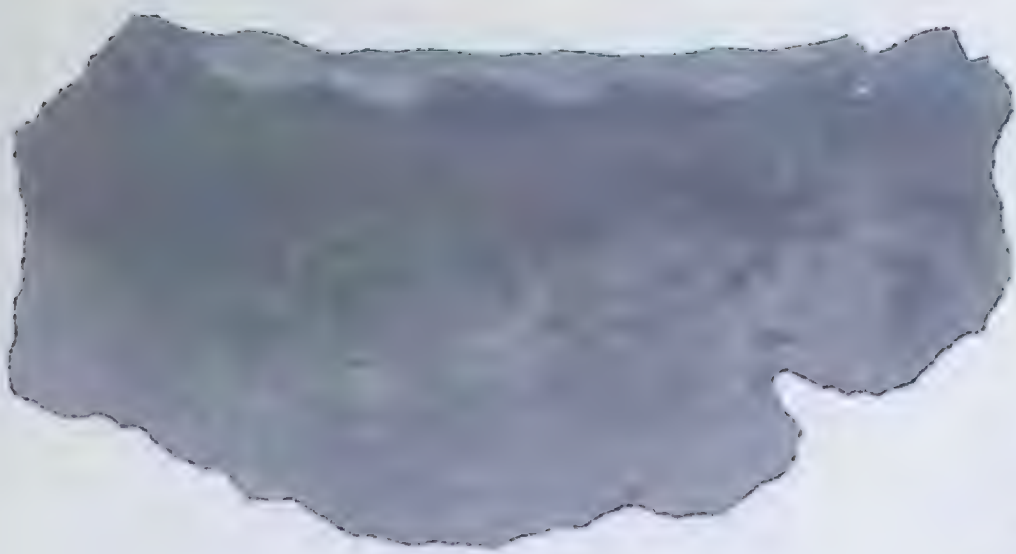


PLATE XIII
(1/2 natural size)

Stratum IV

- Fig.*
1. 2 Peninsular Woodland rims
3. 4 Miscellaneous incised rims
5. 6 Stamped rims
7. 8 Triangular arrowheads
9 End scraper
10 Wedge
11 Abrader fragment
12 Slate palette



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2



3



4



5



6



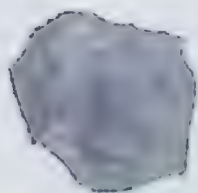
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PLATE XIV
($\frac{1}{2}$ natural size)
Strata V-VII

- | | |
|-------------|--------------------------|
| | Stratum V |
| <i>Fig.</i> | |
| 1 | Dragged stamp rim |
| 2 | Peninsular Woodland rim |
| 3 | Incised rim |
| 4 | Projectile point |
| | Stratum VI |
| 5 | Side scraper |
| 6 | Push-pull rim |
| 7 | Incised rim |
| 8 | Stamped rim |
| 9 | Water-washed body sherd |
| | Stratum VII |
| 10, 12, | |
| 15 | Stamped rims |
| 11 | Native copper awl |
| 13, 14 | Peninsular Woodland rims |



1



2



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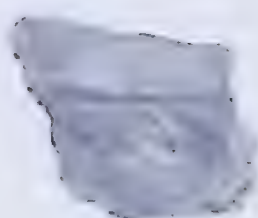
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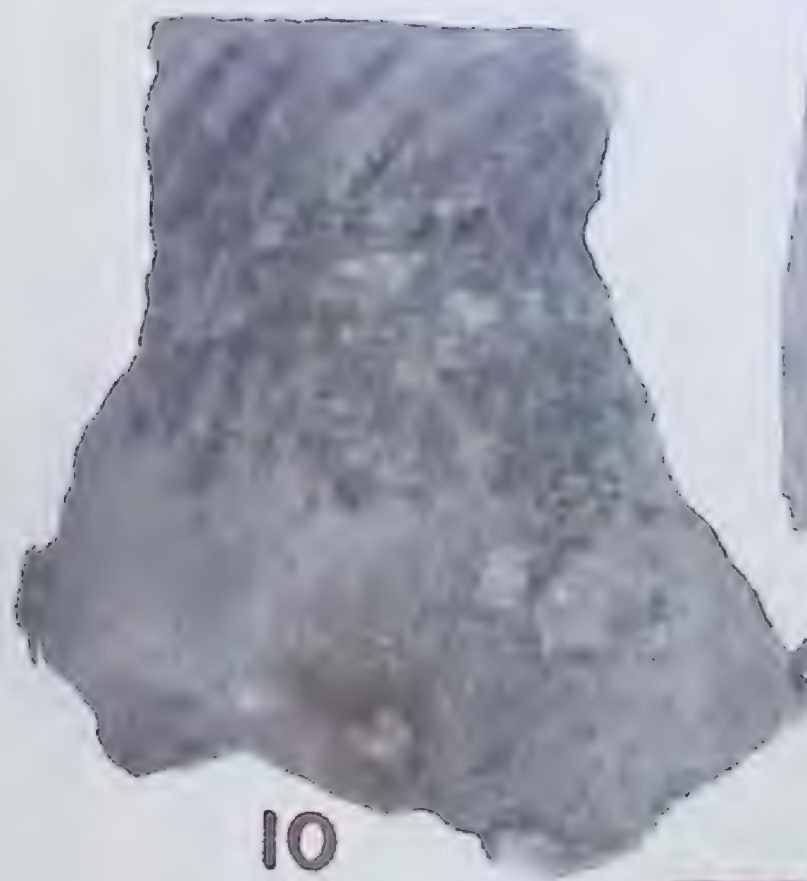
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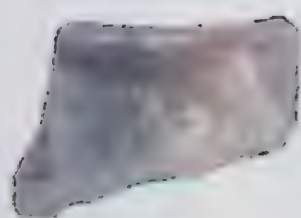
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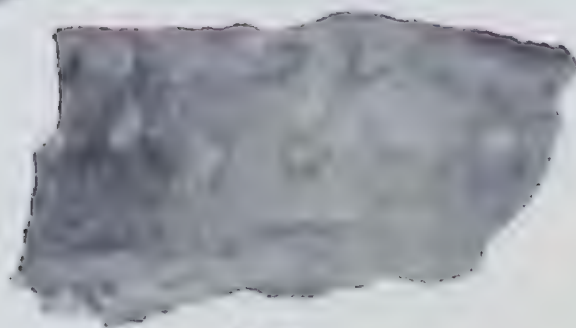
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PLATE XV

Stratum IX
Complete pottery vessel—stamped variety



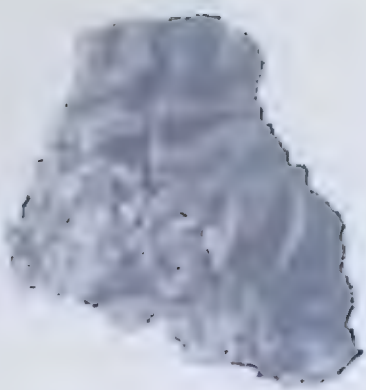
PLATE XVI

Rim sherds from below stratum III—strata indeterminate

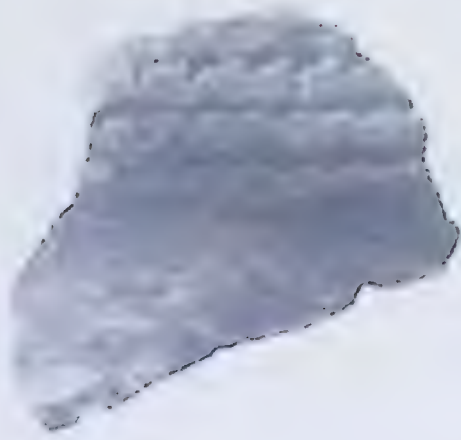
PLATE XVI



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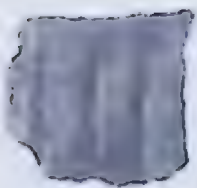
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THE CHASE BURIAL SITE (EeQw:1), BRITISH COLUMBIA

BY DAVID SANGER

RÉSUMÉ

Au cours de l'été de 1960, on a découvert par hasard, près de Chase, dans le centre-sud de la Colombie-Britannique, un gisement archéologique riche en sépultures appartenant à l'époque préhistorique récente. Bien que les collectionneurs de souvenirs aient presque détruit le gisement par leurs fouilles, une petite équipe de l'Université de la Colombie-Britannique a entrepris de mettre à jour un petit nombre de sépultures pour y étudier le mode probable d'ensevelissement. Dans les cinq cas, les corps étaient fortement repliés et ensevelis en position anatomique primaire. Une vaste quantité d'objets fabriqués accompagnaient les corps. L'analyse des pointes de projectiles et des autres objets façonnés en pierre, en andouillers, en os, en coquillage, en cuivre et en bois, permet d'attribuer au gisement archéologique la date limite de 1750 de notre ère, quoique plusieurs inhumations remontent probablement à quelques siècles auparavant. Parmi les objets façonnés, il y en a plusieurs qui appartiennent à un genre non usuel dans les emplacements de lieux habités. L'analyse de ces objets présente des aperçus sur des aspects de culture rarement évidents dans les gisements d'habitation.

Une revue des rares données sur les gisements de sépultures du plateau de la Colombie-Britannique a conduit à la conception de la phase Kamloops qui, croit-on, englobe les cultures préhistoriques du centre-sud de la Colombie-Britannique, à peu près entre les années 1250 et 1800 de notre ère. Les étages de gisements archéologiques de la phase Kamloops correspondent à la distribution ethnographique connue des langues Thompson et Shuswap. En plus de conduire à la définition de la phase Kamloops, la revision de la littérature permet d'entrevoir de nombreuses différences culturelles importantes entre les ensembles du plateau américain appartenant à l'époque préhistorique récente et ceux du centre-sud de la Colombie-Britannique. Ces subdivisions sont mises en parallèle avec celles qu'a esquissées l'ethnologue V. Ray.

SUMMARY

During the summer of 1960 a rich late prehistoric burial site was discovered by accident near the town of Chase in south-central British Columbia. Although digging by relic collectors almost entirely destroyed the site, a small crew from the University of British Columbia

managed to excavate a small series of burials and ascertain the probable burial pattern. The five complete burials were tightly flexed and buried in primary anatomical position. Grave additions covering a wide range of artifacts accompanied many of the burials. From the analysis of the projectile points and other stone, antler, bone, shell, copper, and wooden artifacts, the site is assigned a terminal date of A.D. 1750, with some of the interments possibly dating to a few centuries earlier. Among the artifact inclusions are many decorated pieces of a type usually not found in habitation sites. The analysis of these artifacts affords some insights into aspects of culture rarely evident from habitation site assemblages.

A review of the scanty data on burial sites from the British Columbia Plateau has led to the concept of the Kamloops phase, which is considered to encompass the prehistoric cultures in south-central British Columbia between approximately A.D. 1250 and A.D. 1800. The sites considered components of the Kamloops phase coincide with the ethnographically known distribution of Thompson and Shuswap languages. In addition to leading to the delineation of the Kamloops phase, the review of the literature suggests that there are a number of significant cultural differences between the late prehistoric assemblages of the American Plateau and those of south-central British Columbia. These subdivisions parallel those outlined by the ethnographer, V. Ray.

PART I

DESCRIPTION OF SITE

Introduction

The Chase burial site, located in south-central British Columbia, was first discovered early in the summer of 1960 when road construction exposed a skeleton. An elderly resident of the Neskainlith Indian Reserve gathered up the bones. In the course of digging a new grave off to the side of the road he struck another aboriginal burial, unearthing a large nephrite celt. News of the discovery spread rapidly, and shortly hordes of relic collectors, Indians and Whites alike, were looting the site.

Although the situation was brought to the attention of Dr. C. E. Borden of the University of British Columbia, all the available trained manpower was committed to other excavations, and it was not until September 1960 that a small crew could be sent to Chase. By that time the site was almost totally destroyed, with large amounts of backdirt and piles of human skeletal material scattered around. Many of the collections of the local residents were no longer in the area, the pieces having found a ready market with museums and passing tourists. Fortunately, Mr. W. Duff of the University of British Columbia visited the site in July and photographed many of the then existing collections. It is from his slides that many of the artifacts are described.

A report on the Chase burial site was submitted as an M.A. Thesis to the University of British Columbia in 1962. Part I of this presentation is essentially similar to the thesis version; Part II retains many of the ideas originally expressed, but they have been re-worked and abbreviated. As this paper was submitted for publication before the analysis of the Lochnore-Nesikep locality sequence, comparisons with this long cultural sequence are limited.

ACKNOWLEDGMENTS

From the initial securing of the excavation funds, through the first analysis and written presentation, and up to the critical reading of this version of the report, the assistance and guidance of Dr. C. E. Borden have been most valuable and greatly appreciated.

A grant from the National Research Council of Canada to Dr. Borden financed the month-long expedition led by Mr. P. Harrison, now of Trent University. The third member of the crew was Mr. D. Smith, now at the University of Victoria.

I owe thanks to many individuals and institutions for their cooperation and assistance in producing this archaeological report. Our field-work was aided by cooperation of the officials of the Neskainlith and Adams Lake reserves, and by the Kamloops Museum Association for permitting me to photograph their Chase collection. The analysis was facilitated through discussion with Dr. J. Stager, Dr. I. McCowan, and Mr. W. Adams, all of the

University of British Columbia, Mr. R. Drake of the Vancouver City Museum, and others. Mr. C. Larter kindly donated his time to draw some of the specimens.

My wife, Mary Jo Sanger, has contributed in many ways. Her valued assistance in the field, in the laboratory, and in the preparation of this report is greatly appreciated.

Many helpful comments have come from the faculty and students of the Universities of British Columbia and Washington. Mr. R. Kidd has been kind enough to critically comment upon this report.

THE SETTING

The Pacific Northwest Plateau (Figure 1) includes much of the states of Oregon and Washington, parts of Idaho, and the Canadian Interior Plateau of south-central British Columbia. The Canadian Plateau, situated between the Rocky Mountains on the east and the Cascade and Coast ranges on the west, at a general elevation of 3,500 to 5,000 feet, consists of a rolling uplands with peaks normally not exceeding 6,000 feet. On the southern or western exposures of peaks the cover is parklike, while on the northern flanks, denser forests are common. The Plateau is deeply incised by several rivers, the most important of which are the Columbia, the Fraser, and the Thompson. The flora in the river valleys is usually 'poverty grass' (*Bromus tectorum*), cactus (*Opuntia fragilis*), sagebrush (*Artemisia tridentata*), rabbit bush (*Chrysothamnus nauseosus*), and scattered bunch grass (*Agropyron spicatum*). On the upper slopes ponderosa pine merges into Douglas fir and lush grass lands. As the timberline in the Plateau is about 6,500 feet, the summits of most of the peaks are wooded.

The town of Chase (elevation 1,200 feet) is located thirty-six miles east of the city of Kamloops in the eastern portion of the Canadian Plateau. The South Thompson River drains Little Shuswap Lake at Chase and continues westward to Kamloops and Kamloops Lake through a steep-walled valley averaging three miles in width. The annual precipitation in the Chase region averages twenty inches. The winters are short and cold, the summers long and hot. At Kamloops, the mean minimum temperature for February is 7°F, and the mean maximum temperature for July is 90°F. Usually the climate of Chase is somewhat more temperate. The fauna of the area is rich and varied. The wooded slopes and high open meadows of the surrounding hills provide excellent cover for wapiti (*Cervus canadensis nelsoni*) and mule deer (*Odocoileus hemionus hemionus*). Other mammals also are present in the Chase region, but their economic potential is considerably less. Numerous varieties of fish may be taken from the South Thompson River and adjoining Little Shuswap Lake. For human subsistence, the anadromous fish are the most important; they include sockeye salmon (*Oncorhynchus nerka*), chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Salmo gairdneri*). Non-anadromous fish include land-locked salmon, commonly known as kokanee (*Oncorhynchus nerka*), pygmy whitefish (*Prosopium coulteri*), and squaw fish (*Ptychocheilus oregonensis*) (Carl et al. 1959). Migratory water birds of

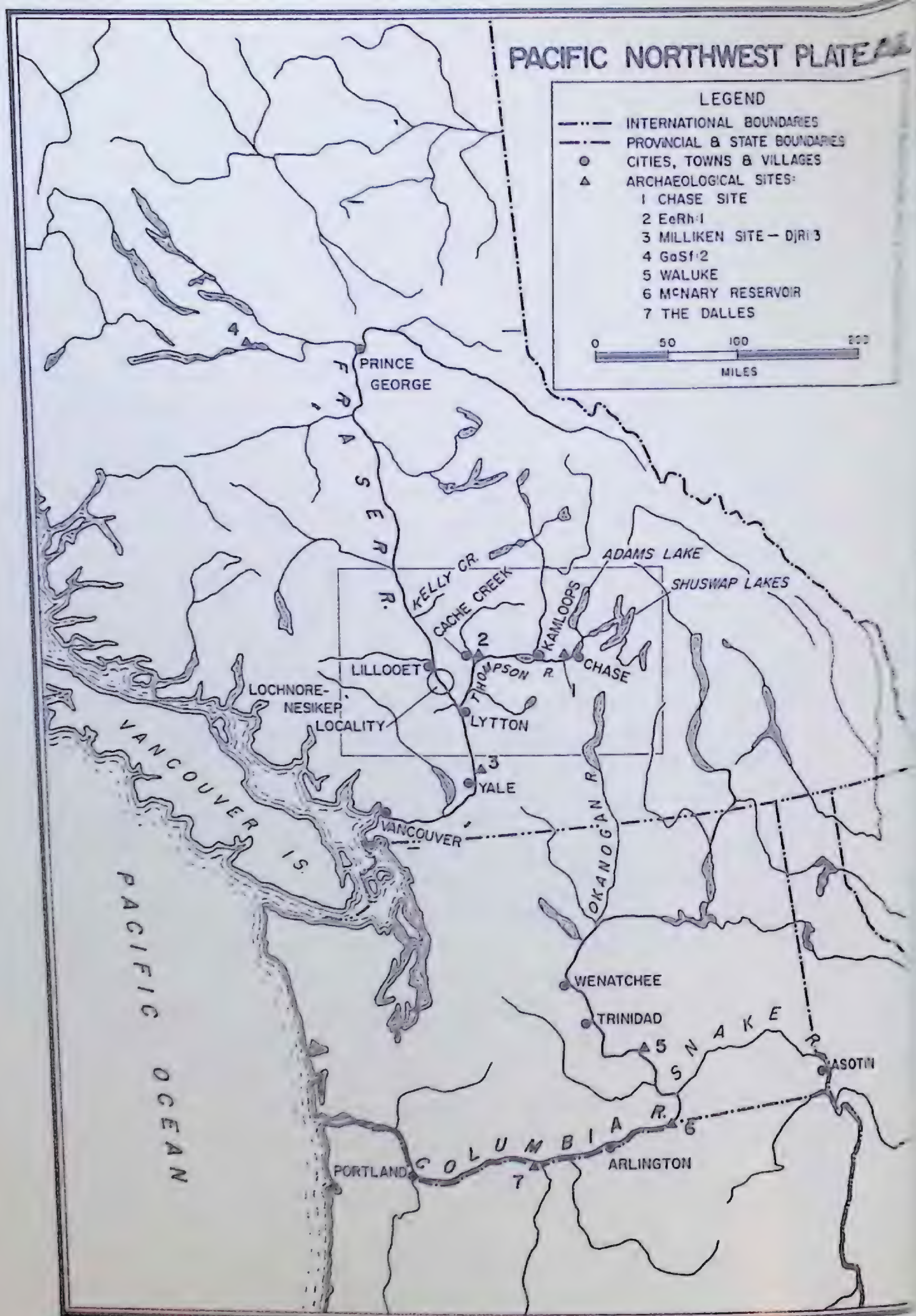


FIGURE 1—Map of the Pacific Northwest Plateau
(Outlined central area is expanded in Figure 2)

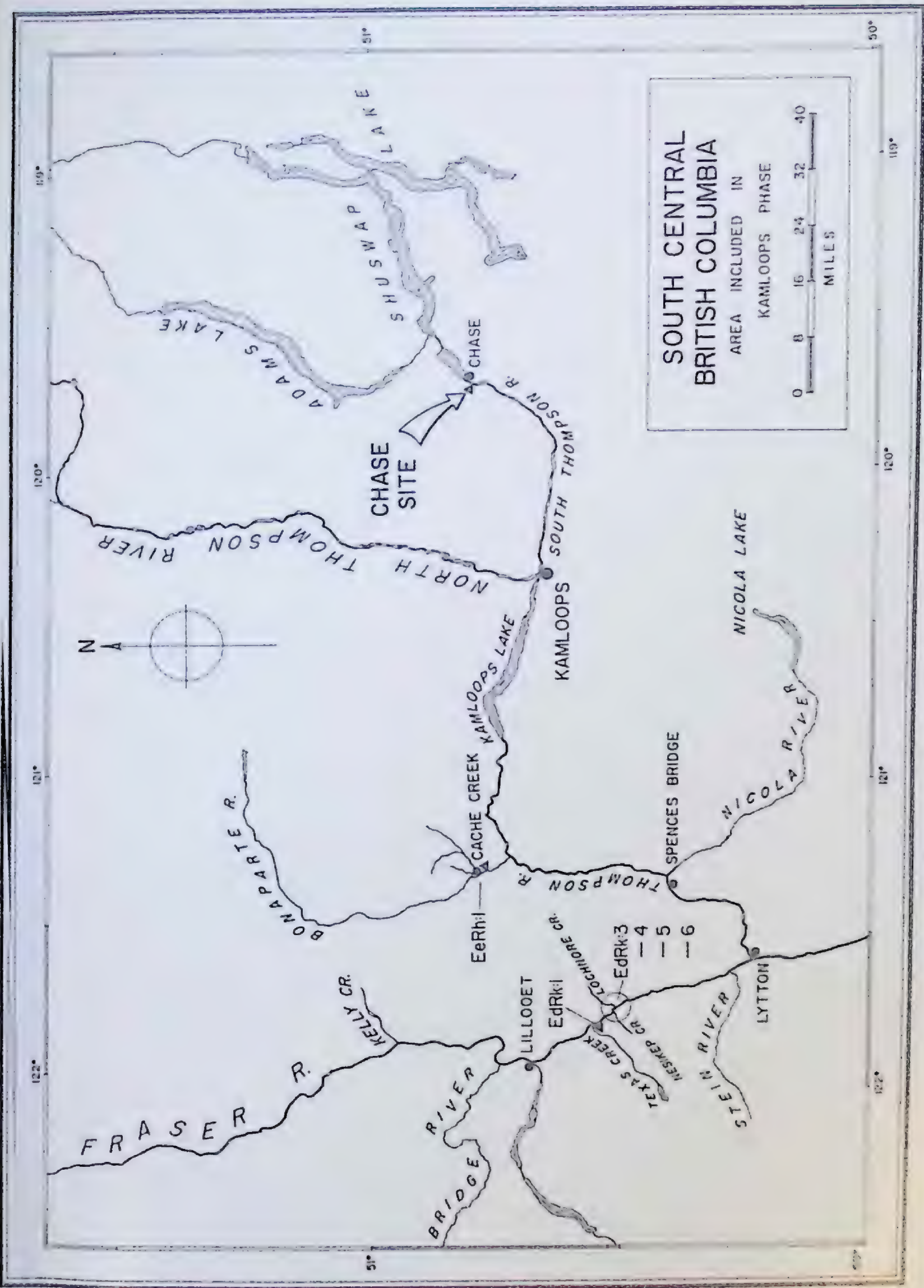


FIGURE 2—South-Central British Columbia
(Map is an enlargement of outlined area in Figure 1)

many species frequent the river and nearby lakes, and members of the grouse and ptarmigan family are year-round residents of the area. A great variety of edible plants is available, and a complete listing, based on the notes of J. Teit, has been prepared by Steedman (1930).

The dominant physiographic features of the Chase area are mainly products of the late glacial deposition of vast silt deposits and of subsequent deglaciation. According to a recent study by Fulton (1965), the silts were deposited in glacial Lake Thompson which occupied the present South Thompson River Valley between two ice dams, one at Little Shuswap Lake and the other at Kamloops. In some sections the annual varves, or rhythmites, are horizontal, but near Chase there are indications that the silts were deposited on blocks of ice. The stratified silts (illustrated in Plate II B) were apparently deposited against ice; as the ice melted the silts slumped into the resulting holes.

The Chase burial site is located on a ridge-like formation extending into the floodplain of the right bank of the South Thompson River. The ridge is a quarter of a mile north of the river, approximately three miles west of Chase, and on the boundary line between the Neskainlith and Adams Lake Indian reserves (Figure 3). A secondary road linking Kamloops with Chase along the right bank of the South Thompson River has cut through the western end of the site, isolating a flat-topped section over two hundred feet long and averaging thirty feet wide (Figure 4, Plate II A). Most of the burials were interred in this section, although in the summer of 1961 an amateur excavated a few additional burials from an area west of the road.

The site, like the surrounding floodplain, was covered with grass and generally used for pasture prior to the discovery of the burials. The ridge is composed of three distinct soils: (a) a thin, dark brown topsoil; (b) a very clean, light brown, coarse sand with some gravel; and (c) the stratified silts. The sand deposits overlie the silts on the southern half of the site at depths ranging from a few inches to three feet. On the northern side, the sand and gravel deposits may be up to twelve feet deep—the height of the ridge above the floodplain. A profile of the western side of the road cut illustrates the slumped and laminated Lake Thompson silts on the left and the brown sand and gravel deposits on the right (Plate II B). The profile is virtually the same throughout the site, except that the contact between the sand and the silts may become more nearly vertical to the east.

ABORIGINAL POPULATION

At the time of first contact with Europeans (roughly 1800), the Pacific Northwest Plateau was divided into two major linguistic groupings. The southern portion of the American Plateau was claimed by Sahaptin speakers, and the northern half and most of the Canadian Plateau was inhabited by peoples speaking various languages of Interior Salish. North of the Salish in British Columbia were the Athapaskans, and in the extreme southeast of the Canadian Plateau lived the Kutenai.

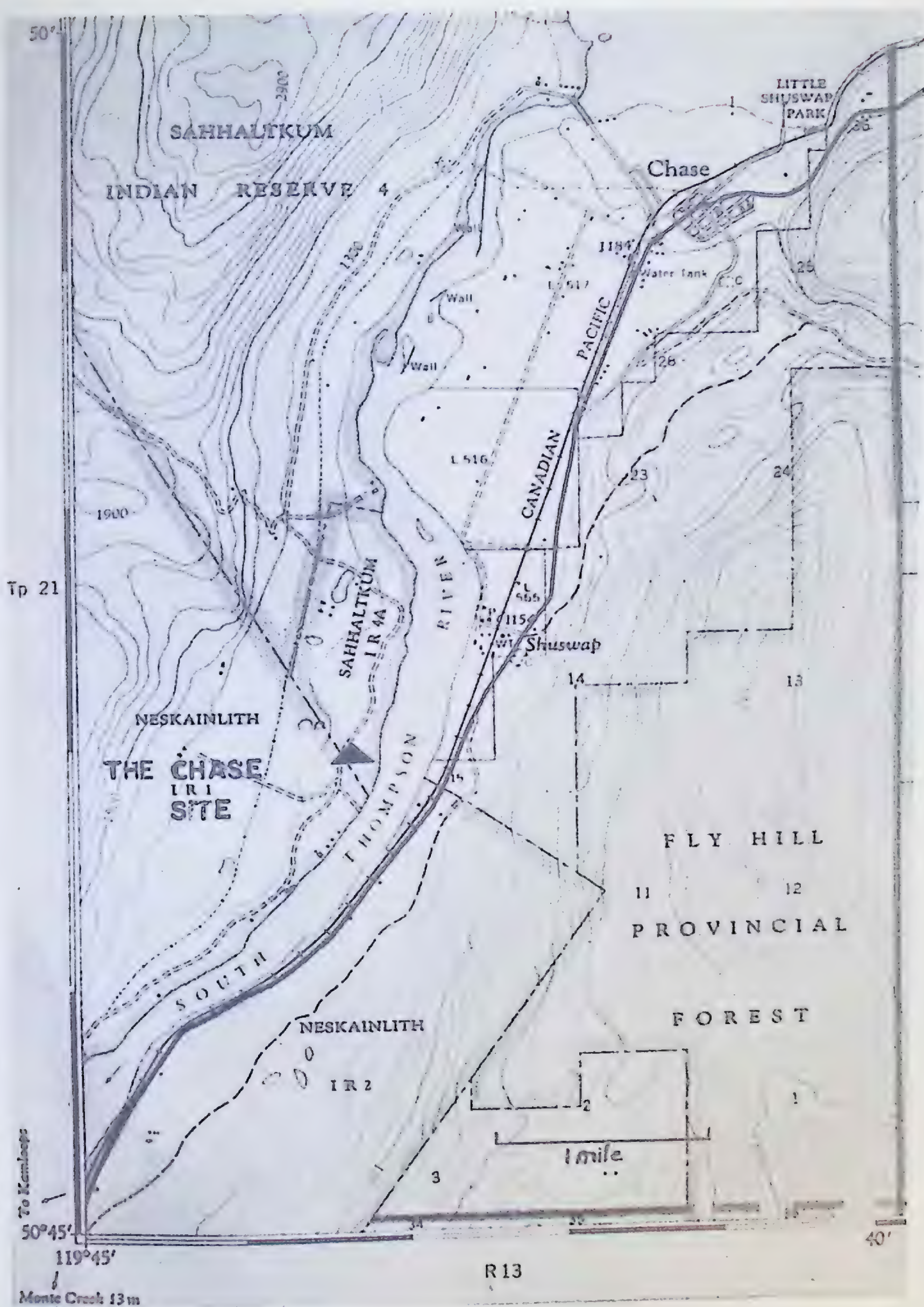


FIGURE 3—The South Thompson River Valley and the Chase Area
(Map photographed from Sheet 82L/13 East of the Department of Mines and
Technical Surveys National Topographic System)

The Canadian Plateau Salish were divided into four groups (or tribes) the Lillooet, the Thompson, the Shuswap, and the Okanagan. Each group recognized subdivisions of themselves. The Lake Band of the Shuswap probably occupied the area around Chase, and an aboriginal village known as *Halā'ut* (Teit, 1909, p. 461) was located on the north bank of the Thompson River three miles below Chase. There are some housepit depressions roughly one-half mile upstream from the Chase Burial site, and these may have been *Halā'ut*. These housepits were not examined in September 1960, and an opportunity has not presented itself since.

More detailed comments on the ethnography of the Shuswap will be presented following a discussion of the archaeology of the burial site.

ARCHAEOLOGY IN THE CANADIAN PLATEAU

Until recently, there have been few archaeologists working the Pacific Northwest. Harlan I. Smith excavated burials from Lytton (1899a) and Kamloops (1900) in the Canadian Plateau, dug into some shell middens on the Coast (1903, 1907), and made a few excursions into the American Plateau (1910). The 1930 publication of Strong, Schenck, and Steward detailing their work at The Dalles on the Columbia River has provided a wealth of comparative material. The recent archaeology of the Middle Columbia River was covered in part by a monograph of Osborne (1957), and the Upper Columbia in the American Plateau was surveyed and reported upon by Collier, Hudson, and Ford (1942). No archaeology of note was done in the Canadian Plateau between the nineteenth century efforts of Smith and the investigations of Borden in central British Columbia (1952b), a survey of the Kootenay region (Borden 1956), and a brief survey near the International Boundary by Caldwell (1954).

Although there is much valuable unpublished data in the forms of theses, preliminary reports, and field notes on sites excavated in the American Plateau, I have utilized mainly published sources. For the comparatively little-known Canadian Plateau I have had to use all available sources. The discussion is limited to the recent, or late prehistoric, period in Plateau prehistory, a period extending from possibly as early as A.D. 1000 to A.D. 1800.

EXCAVATIONS

The site was surveyed and a five-foot grid system established, with each five-foot square identified by distance and direction from a fixed datum. In areas where sand overlaid the silts, excavations were terminated upon striking the latter, since any intrusions into the silt would have been plainly visible. Where no silts underlaid sand deposits, we excavated with trowels and shovels to a depth of from four to five feet until a burial was reached. The final exposing, prior to photographing and sketching, was done with dental hand tools and brushes. The artifacts were taken to the Archaeological Laboratory of the University of British Columbia for further study, and the skeletal material was shipped to the University of Toronto for examination.

Excavations were initially confined to the extreme eastern end of the site where the relic collectors had dug only a few exploratory pits which apparently produced negative results. Burials 1-3 were encountered at the eastern extremity of the ridge (Figure 4). Burial 4 was discovered midway between the ends of the site in a small undisturbed area beneath a foot of relic collectors' backdirt. Burial 5 was located under a similar amount of backdirt in the western end. The last interment, Burial 6, was found in an undisturbed area at a depth of only a few inches. So badly disarticulated were the dispersed bones that it could not be determined whether a complete individual was represented. Lack of time prevented further investigation of this inhumation. The burial may have been disturbed by animals. Burials 1-5 were all primary; that is, in normal anatomical articulation. The bodies were flexed moderately to very tightly and interred at depths of between twelve and twenty inches. A complete description of the burial pattern is given later. In Appendix I the location and position of the burials are presented in outline form, together with the associated artifacts and their field catalogue numbers. The location of each burial is plotted on Figure 4.

ARTIFACTS

Of the approximately 400 artifacts described in this section, only 130 are in the University of British Columbia collection. The remaining artifacts are privately owned or are in the Kamloops Museum Collection. The objects recovered by our excavations are listed in Appendix I together with the burials they accompanied. Throughout this section, the code letters EeQw:1 signify the University of British Columbia catalogue system, and various numbers and combinations of numbers and letters identify the collection of the Kamloops Museum.

Unfortunately, the assemblage cannot be described in anything like the desired detail, as many of the most interesting pieces were dispersed from the Chase area before the arrival of the field party in September 1960. Fortunately, the site was visited by Mr. W. Duff in July, when most of the collections were intact. Mr. Duff photographed all the major collections, and it is from his colour transparencies that many of the objects are described. However, field photographs, regardless of quality, are not wholly adequate for laboratory study of individual specimens, and some limitations should be noted. First, the two-dimensional aspect of most photographs prevents thickness measurements; and secondly, when a scale is included and the camera lens is not positioned directly above the subject, a certain amount of distortion is introduced. The reader is warned, therefore, against assuming accuracy for any artifact dimension appearing in a table unless the object is preceded by a catalogue number, in which case the object has actually been measured. The dimensions, then, are intended to serve as a guide. At times there is a discrepancy between the stated number of artifacts in any category and the number appearing in the accompanying table of dimensions. This is because a scale was not included in some photographs. Finally, a percentage division of the assemblage, industry by industry, is not meaningful in

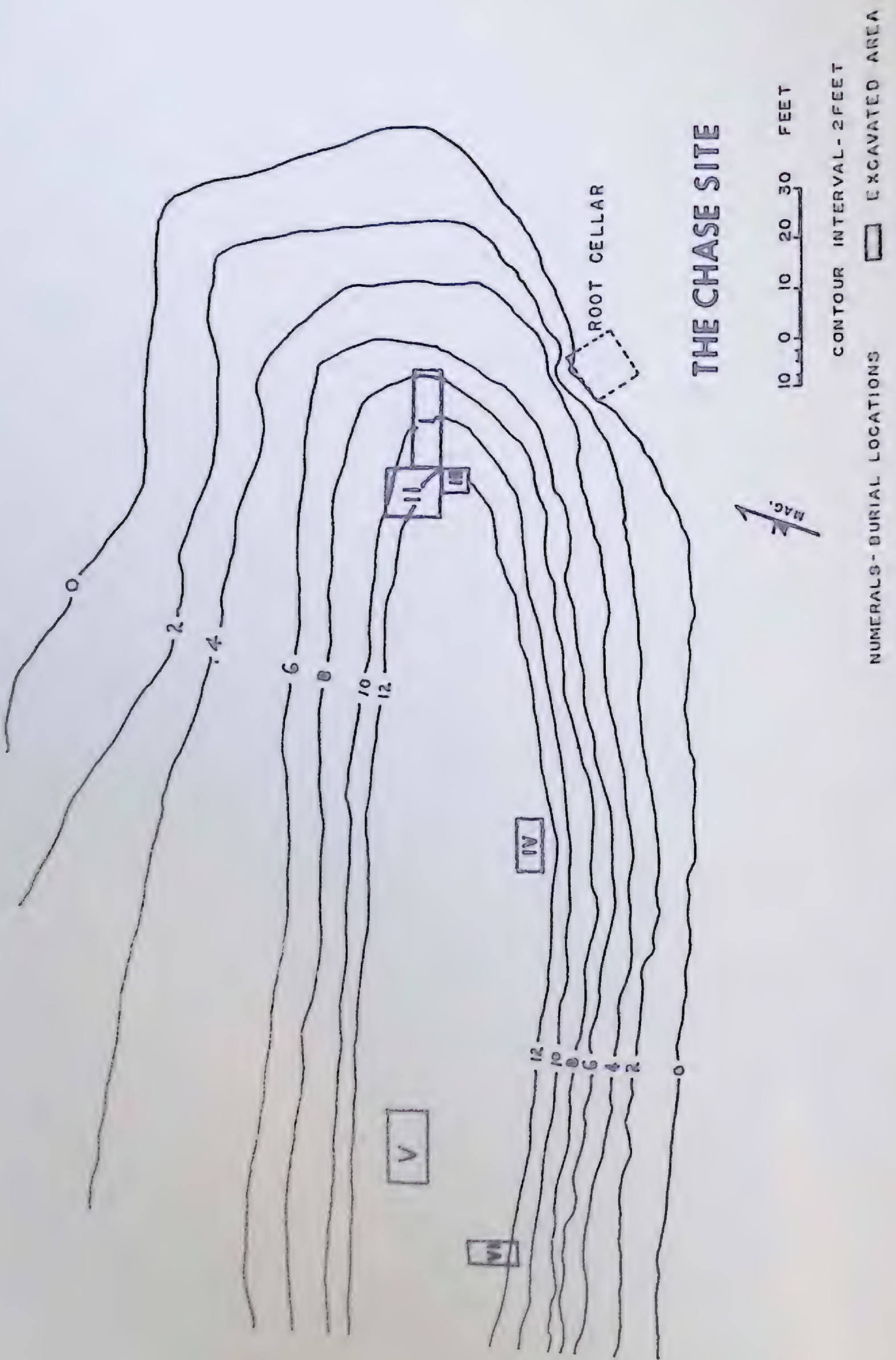


FIGURE 4 - Contour Map of the Chase Site

this respect. It seems likely, for example, that the very low incidence of flake scrapers and knives in private collections represents selective gathering. The field party recovered many such artifacts from relic collectors' back-dirt piles.

STONE INDUSTRY

Chipped Points (110)—The absence of an indigenous pottery tradition in the Pacific Northwest region has encouraged archaeologists to concentrate on chipped points when comparing assemblages. Several different typologies have been advanced, but to date no single scheme has proved acceptable to all workers. Two recent conferences, dedicated to the problem of establishing a Pacific-Northwest-wide typology of chipped points, have demonstrated just how divergent the various views are.

Most of the points described in this report are studied from photographs, a technique which does not allow sufficiently accurate measurements for the establishment of a totally new typology based on outlines and dimensions. The method here is to split the points into many categories, rather than to lump numbers of points together into a 'type' based solely upon outlines. Measurements included in Table 1 are intended to indicate approximate size range and average length and breadth.

The typology employed here is a modification of the one used by a number of Plateau archaeologists, including Strong *et al.* (1930), Collier *et al.* (1942), Garth (1952), and Borden (1956). Because it is based primarily upon the presence or absence of a stem (side notching does not produce a stem in this scheme), the typology has been criticized for lacking specific and non-ambiguous descriptive categories (Smith 1954) and for insensitivity (Osborne *et al.* 1961).

The sensitivity of the typology can perhaps be sharpened by adopting a specific nomenclature. Thus, for the Chase collections, the term 'oval' refers to points which are widest at a point equidistant from either extremity, and 'leaf' refers to shapes exhibiting a shift in maximal width towards one end. Stemless triangular points are subdivided according to whether the sides are straight or rounded (convex). Concave-sided points do not occur in the sample. 'Pentagonal' points are five-sided, and in this assemblage the lower two sides always contract towards the base. If the contraction is pronounced enough to produce shoulders, the point is placed in the stemmed category. Serrated points exhibit many small notches along one or both sides; these are distinguished from the multi-notched triangular points which characteristically display three or more large side notches. Typical point outlines are illustrated in Figure 5.

No new point types are advanced here. It is felt that this step can be taken when large samples from the Chase-Kamloops area are available for a study and when there is some Plateau-wide agreement on typological systems. Finally, it is realized that not all chipped points are necessarily projectile points. Some of the larger and more asymmetric pieces are likely hand-held or hafted cutting blades, or scrapers. In this typology, however, anything formed into a point and bifacially flaked is classified as a chipped point.

POINT OUTLINES



NAA



NAb2



NAb3 II



NBb3



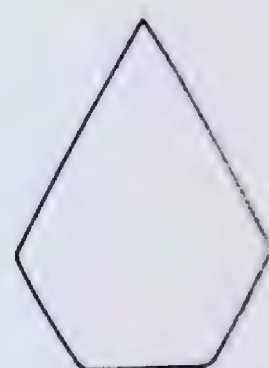
NBa2



NBd3



NB(r)a2



NCa



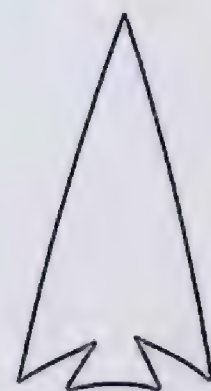
NDa



SAa1

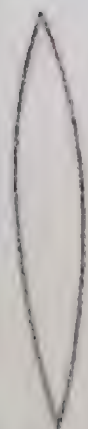


SBa1



SCb2

DRILL OUTLINES



GROUP A



GROUP B



GROUP C

FIGURE 5—Projectile Point and Drill Outlines

Typology of Chipped Points

N — Not Stemmed

A. Leaf Shaped

- (a) Pointed at both ends
- (b) Pointed at one end
 - 1. Convex base
 - 2. Straight base
 - 3. Concave base
 - i. Serrated along one side
 - ii. Serrated along both sides
 - iii. Notched more than twice on either side

B. Triangular (straight sides)

B(r). Triangular (rounded sides)

- (a) Straight base
- (b) Concave base
- (c) Convex base
- (d) Concave base with single spur
 - 1. Unnotched sides
 - 2. Notched once on either side
 - 3. Notched more than once on one side and once on the other
 - i. Notched in centre of base
 - ii. Two notches in centre of base

C. Pentagonal

- (a) Straight base
- (b) Concave base
- (c) Convex base

D. Oval

- (a) Pointed at both ends
- (b) Pointed at one end
 - 1. Straight base

S — Stemmed

A. Contracting Stem

- (a) Shouldered
- (b) Barbed
 - 1. Straight base
 - 2. Concave base
 - 3. Convex base

B. Parallel-sided Stem

- (a) Shouldered
 - 1. Straight base

C. Expanding Stem

(a) Shouldered

(b) Barbed

1. Straight base
2. Concave base
3. Convex base
 - i. Serrated along one side
 - ii. Serrated along both sides

Table 1 indicates the marked numerical superiority of non-stemmed over stemmed points. Most common are the small side-notched, straight-based triangular points (NBa2) (Plate XIV, d). The NBb3 and allied forms, which comprise over sixteen per cent of the sample, are notched at least three times—once on one side and twice on the other (Plate XIV, f). An intentional variant of the triangular side-notched point is the form with a unilateral spur (NBd), of which there are seven examples (Plate XIV, e).

Leaf-shaped points, constituting 15 per cent of the sample, are generally larger than the triangular forms. Of interest is the number of serrated forms. As is true of the multi-notched points, the extra flakes removed would not appear to make the artifact more efficient.

Most of the points are made from glassy basalt. A few are of chalcedony and chert. The high percentage of non-stemmed points (83%) is not exceeded at any other reported-upon site in the Plateau. Two-thirds of the points from the Upper Columbia are stemless, and downstream sites have increasingly higher percentages of stemmed points (Collier *et al.* 1942, p. 63; Osborne 1957, p. 80; Garth 1952, p. 51; Strong *et al.* 1930, p. 79). Collections from sites in the Lytton–Lillooet region contain side-notched points in late horizons. The multi-notched points appear to be a Canadian Plateau feature, as they have been reported only from Lytton and Kamloops (Smith 1899a, p. 136; 1900, p. 409) and in private collections from Lillooet.

Chipped Knives (18)—Bifacially chipped artifacts that are not points or drills are classified as knives. The series of eighteen was found during excavation or gathered from the surface, where the knives had been discarded by collectors. The rejection of the flake knives in favour of more finely fashioned objects may be responsible for the low incidence of chipped knives in private collections.

Some of the knives are merely retouched amorphous-shaped flakes, but others are suggestive of definite forms. Notable among these are two large, carefully flaked ovoid knives averaging 16 cm long and 9 cm wide. Many of the larger 'points' are probably knives. Glassy basalt is the most common material, but some knives are made of quartz and chalcedony.

Chipped Scrapers (19)—Scrapers are distinguished from knives on the basis of flaking; the former are unifacially worked and the latter bifacially. The distinction is arbitrary, and it is recognized that the function may not be wholly dependent upon the method of manufacture. Although there are nineteen scrapers in the University of British Columbia collection, none are

TABLE 1—*Dimensions and frequencies of chipped points*

Point Form	No.	Maximum Length (cm)	Minimum Length (cm)	Maximum Breadth (cm)	Minimum Breadth (cm)	Mean Length (cm)	Mean Breadth (cm)	% of Total
NAa	2	12.0	11.0	5.0	4.0	11.5	4.5	1.8
NAai	1	7.0	7.0	2.0	2.0	7.0	2.0	0.9
NAb1	4	9.8	4.5	3.5	3.0	6.0	2.8	3.6
NAb2	2	10.8	9.8	4.0	3.5	10.3	3.7	1.8
NAb2 ii	4	5.0	4.5	3.0	0.5	4.7	1.5	3.6
NAb2 iii	2	4.0	3.7	1.6	1.3	3.8	1.4	1.8
NAb3 II	1	3.0	3.0	0.5	0.5	3.0	0.5	0.9
NBa2	21	4.7	1.8	2.2	1.1	2.6	1.6	19.1
NAa1	1	5.2	5.2	4.5	4.5	5.2	4.5	0.9
NBa2 i	1	1.9	1.9	1.3	1.3	1.9	1.3	0.9
NBa2 ii	1	2.8	2.8	1.7	1.7	2.8	1.7	0.9
NBa3	4	4.0	2.5	2.0	1.7	3.4	1.8	3.6
NBb1	1	3.7	3.7	1.7	1.7	3.7	1.7	0.9
NBb2	2	2.9	2.5	1.8	1.5	2.7	1.6	1.8
NBb3	9	4.5	2.0	2.0	1.5	3.2	1.8	8.2
NBc1	2	4.3	4.0	2.3	2.0	4.2	2.1	1.8
NBc2	2	2.7	2.5	1.7	1.7	2.6	1.7	1.8
NBd2	4	5.0	2.4	2.0	1.3	3.7	1.7	3.6
NBd3	3	3.3	2.6	1.9	1.6	2.9	1.8	2.7
NB(r)a1	1	4.3	4.3	3.3	3.3	4.3	3.3	0.9
NB(r)a2	3	2.3	1.9	1.7	1.3	2.2	1.5	2.7
NB(r)a3	1	3.4	3.4	1.3	1.3	3.4	1.3	0.9
NB(r)b1	1	15.0	15.0	5.9	5.9	15.0	5.9	0.9
NB(r)c2	1	3.2	3.2	1.5	1.5	3.2	1.5	0.9
NB(r)d3	1	2.6	2.6	1.9	1.9	2.6	1.9	0.9
NCa	5	11.0	3.5	5.5	2.0	7.3	3.8	4.6
NCb	6	6.0	2.3	4.0	2.0	4.4	2.9	5.5
NCC	1	4.4	4.4	2.3	2.3	4.4	2.3	0.9
NDa	4	10.2	5.5	4.1	2.2	7.7	3.0	3.6
NDb1	2	8.9	7.2	3.4	2.5	8.0	3.0	1.8
	93							84.2
SAa1	5	7.5	2.5	3.0	1.0	4.9	1.9	4.6
SAa2	1	6.4	6.4	2.7	2.7	6.4	2.7	0.9
SAa3	1	4.0	4.0	2.5	2.5	4.0	2.5	0.9
SCa3	1	2.2	2.2	1.3	1.3	2.2	1.3	0.9
SCa1	4	16.0	1.7	5.5	1.1	5.9	2.6	3.6
SCa2 ii	1	6.5	6.5	3.0	3.0	6.5	3.0	0.9
SBa1	2	13.0	6.7	4.9	4.0	9.8	4.5	1.8
SCb3	2	3.2	2.8	2.6	1.7	3.0	2.2	1.8
	17							15.4
Totals	110							99.6

illustrated in the numerous photographs of private assemblages, again probably because of the selective collecting by relic hunters.

The scrapers are small and are based on thin amorphous-shaped flakes. No examples of steeply flaked end scrapers are present, nor are there indications that any of the recovered specimens were hafted. Basalt and occasionally chalcedony flakes were made into scrapers.

Drills (6)—The six drills can be subdivided into three groups: Group A is lanceolate (Figure 5, A); Group B has a parallel-sided pile and an expanding triangular base (Figure 5, B); Group C has a tapering pile with projections near the base (Figure 5, C). All forms are characterized by high median ridges.

TABLE 2—*Dimensions of drills*

Group	Length (cm)	Width Pile (cm)	Width Base (cm)	Material
A (EeQw:1-45).....	5.0	0.5	—	Basalt
A.....	5.2	1.0	—	Quartz
A.....	5.7	1.3	—	Chalcedony
B.....	2.9	0.35	1.6	Basalt
B.....	6.0	0.7	2.5	Chalcedony
C.....	5.5	1.25	2.0	Basalt

Hand Mauls and/or Pestles (11)—The hand mauls from the site are all circular to elliptical in cross-section and have tapering shafts. Two distinct forms of mauls are recognized: Group A with sharply flaring ends, and Group B with slightly expanding ends. Six mauls are classified as Group A and five as Group B. Possibly some of the mauls served as pestles or performed a dual function.

Two decorated mauls are included in the A Group. Well-defined eyes and a prominent nose suggest that animals are represented. Two of the B Group mauls have nipple or cone tops, and the remainder have rounded tops.

The distribution of hand mauls in the Plateau is discussed by Smith (1899*b*). Subsequent excavations in the region have not significantly changed this distribution.

TABLE 3—*Dimensions of hand mauls*

Artifact No.	Length (cm)	Diameter of Striking Head (cm)	Material	Comments
A675.....	23.0	10.2	Greywacke	Zoomorphic, Group A
A676.....	20.0	10.2	Greywacke	Zoomorphic, Group A
—	10.2	7.5	Greywacke	Zoomorphic, Group A

Hammerstones (4)—Four hammerstones of naturally rounded igneous rock have been found at Chase. No measurements are available.

Mortars (2)—Two mortars or bowls are present. The larger mortar is made from a granite boulder. Except for the smooth depression, the original surface of the boulder is not modified. The smaller bowl is fashioned from a coarse igneous rock, and the surface of the depression is not smoothed.

Smith reports very few mortars from Kamloops (1900, p. 413), and there is mention of only two from the Upper Columbia sites (Collier *et al.* 1942, p. 75). None are present in the McNary Reservoir assemblages

described by Osborne (1957, p. 63). Mortars appear in quantity in Lillooet sites and at Lytton (Smith 1899a, p. 139); they are also common at The Dalles (Strong *et al.* 1930, p. 97, 98).

TABLE 4—*Dimensions of mortars*

Diameter (cm)	Height (cm)	Diameter of Depression (cm)	Depth of Depression (cm)
20.0	15.0	11.0	6.5
8.5	8.0	5.7	2.0

Shaft Smoothers (11)—The eleven sandstone shaft smoothers in the assemblage are either hemi-cylindrical or rectangular in cross-section and are grooved once down the centre of the flat surface. In all instances the groove is parallel to the long axis of the artifact. Two hemi-cylindrical shaft smoothers (728, 729), which are said to have been found in the same grave, are of equal size. They are 15.0 cm long and 4.5 cm wide. The groove is 0.75 cm wide. No dimensions are available for the remaining nine examples.

Shaft smoothers are common in many Plateau sites. Generally, they are of rough-textured rock, are hemi-cylindrical in cross-section, and occur in pairs. Differences may appear in the positioning of the grooves. The examples from Chase, Kamloops (Smith 1900, p. 419), the Upper Columbia (Collier *et al.* 1942, p. 75), and The Dalles (Strong *et al.* 1930, p. 91) are characterized by a groove down the centre of the flat surface, but some specimens from Lytton (Smith 1899a, p. 146) and the McNary Reservoir region have a diagonal groove (Osborne 1957, p.60-62).

Abrasive Stones (11)—There are eleven basalt or argillite abrasive stones. Ten are roughly rectangular in outline with square to rounded ends and parallel sides. One whetstone is ovoid in outline, with a pronounced groove worn obliquely across the surface from end to end. The artifact is 9.5 cm long, 7.0 cm wide, and 0.8 cm thick. The groove is 0.6 cm wide. Measurements for the other abrasives are given in Table 4.

The mean length of the abrasives is 9.6 cm, and the mean width is 1.8 cm.

TABLE 5—*Dimensions of abrasive stones*

Length (cm)	Width (cm)	Comments
8.25	2.0	EeQw:1-1—one end exhibits a series of ground facets
14.8	3.2	Square ends, one side excurvate, other side straight
10.5	2.5	Square ends, sides straight
9.5	2.2	Rounded at both ends, sides straight
8.5	2.0	Rounded at both ends, sides straight
9.8	1.3	Square end, sides straight, decorated with three oblique lines at one end and four lines at the other end
10.3	1.0	Rounded both ends, side rounded
8.0	1.5	Square ends, sides straight
7.5	1.2	Square at one end, rounded at the other, sides straight
7.5	1.2	Rounded at both ends, sides straight

Abrasive stones occur commonly in the Canadian Plateau (Smith 1899a, p. 144; 1900, p. 417) but infrequently in American sites (Collier *et al.* 1942, p. 75; Osborne 1957, p. 56; Strong *et al.* 1930, p. 104, 105). The apparent scarcity of whetstones in the American Plateau may reflect a less common use of grinding techniques than in the Canadian Plateau.

Celts or Adze Blades (26)—Twenty-six celts from the various collections are available for study (Plate IV A). They are made from nephrite or hard serpentine, two minerals that can be positively identified by laboratory analysis only. The term 'jade' is commonly used to describe these minerals (Hurlbut 1955, p. 369). The celts are large and rectangular. Many still retain evidence of sawing in the manufacturing technique; others are more carefully finished. Most have asymmetric straight bits, and some have beveling at both ends. The colour ranges from dark green to white, light green being most common. The mean length of the celts is 19.7 cm and the mean width 4.5 cm. Two-thirds of the celts range in length from 15.0 cm to 24.0 cm. The longest specimen measures 38.0 cm and the shortest 5.6 cm (Table 6).

Jade celts occur in most Plateau sites. The examples from the Canadian Plateau are usually characterized by straight asymmetric bits, but celts from the Columbia River sites are apparently more often symmetrically bevelled (Collier *et al.* 1942, p. 70, 71; Osborne 1957, p. 59).

TABLE 6—*Dimensions of celts*

Artifact No.	Plate	Length (cm)	Width (cm)	Comments
A703.....	—	38.0	6.5	Rectangular
		28.0	2.3	Rectangular, convex bevel
		27.6	4.6	Rectangular
		26.8	4.4	Rectangular, groove down center of face
EeQw:1-41.....	IVA, b	26.6	4.0	Celt blank, no bit
		26.5	5.0	Groove along one edge
		24.0	4.8	Rectangular
		21.6	4.6	Rectangular—white
		21.5	5.0	Rectangular
		21.2	4.4	Rectangular
		21.0	5.2	Rectangular
		20.4	4.2	Rectangular, groove down centre of face
EeQw:1-140.....	IVA, d	20.0	5.0	Rectangular
		19.5	4.0	Rectangular
		17.8	4.0	Tapering from bit
		17.0	4.4	Rectangular
		16.0	4.5	Rectangular
		15.6	4.2	Rectangular
		15.0	4.0	Tapering from bit
		15.0	3.4	Rectangular
EeQw:1-50.....	IVA, c	14.5	5.5	Rectangular
		14.2	5.0	Tapering from bit—white
		14.0	4.4	Tapering from bit—white
		12.5	3.0	Tapering from bit
EeQw:1-122.....	IVA, a	11.0	5.5	Rectangular
		5.6	4.4	Rectangular—white

Pipes (11)—Only tubular steatite pipes occur at Chase. All are of the trumpet type; that is, the bowl flares out sharply like a trumpet bell (Plate IV B). Of eleven specimens, five are complete and the remainder fragmentary.

Many of the pipes are decorated with incised lines and with encircling bands carved in relief. These bands, which sometimes rise as much as 1.5 cm, occur at the junction of the bowl and the stem. One small pipe is decorated with a human head carved on the bowl in bas-relief (Figure 6, b). The details of sculpture will be discussed in conjunction with other steatite carvings. None of the pipes has a mouth disc, nor has any been perforated for suspension.

Numerous tubular pipes have been reported from other parts of the Plateau. Some trumpet pipes from Kamloops are virtually identical with those from Chase (Smith 1900, p. 429). From Lytton, Smith (1899a, p. 154, 155) describes trumpet and cigar shapes, both with mouth discs. A group of six pipes viewed in a collection from the Lillooet area display an outline that is midway between the sharply flaring trumpet bowl varieties and the gently expanding cigar forms. The pipes are undecorated and have mouth discs.

Many pipes, both trumpet and cigar shaped, are reported from the American Plateau. Five complete specimens and one fragmentary example from the Upper Columbia are discussed by Collier *et al.* (1942, p. 72-74). Two of the complete specimens are cigar pipes with mouth discs, and three trumpet forms lack the disc and expand sharply to form the bowl. A fragment of a trumpet pipe has a single raised band at the junction of the bowl and the stem.

Five whole pipes and fragments of two others from the McNary Reservoir are described by Osborne (1957, p. 57-59). Three cigar forms have mouth discs, but the trumpet pipes are smaller and lack discs. Six tubular pipes, also from the McNary Reservoir, are illustrated by Garth (1952, p. 41-43). They are all trumpet forms although the flare of the bowls is not pronounced. Five of the six examples have mouth discs. Twelve trumpet pipes are reported from The Dalles (Strong *et al.* 1930, p. 103, 104, Plate 24). All the complete specimens have a single raised band at the base of a gently expanding bowl.

TABLE 7—Dimensions of pipes

Length of Bowl and Stem (cm)	Length of Stem (cm)	Length of Bowl (cm)	Diameter of Bowl (cm)	Width of Stem (cm)	Comments
20.2	14.5	5.7	3.2	1.5	Single band, four lines at base of stem, complete
15.8	10.5	5.3	3.2	1.6	Three bands
12.2	8.3	3.9	2.8	1.4	Single band
6.6	2.6	4.0	2.5	1.3	Two incised lines on stem
6.0	3.0	3.0	2.0	1.1	Face carved on side of bowl, single band (Fig. 4)
13.0	8.0	5.3	2.8	1.3	Two bands
14.0	14.0	—	—	1.5	Two bands, no bowl
—	—	3.6	2.5	—	Single band, no stem
—	—	4.2	2.8	—	No stem
—	—	5.2	3.5	—	No stem

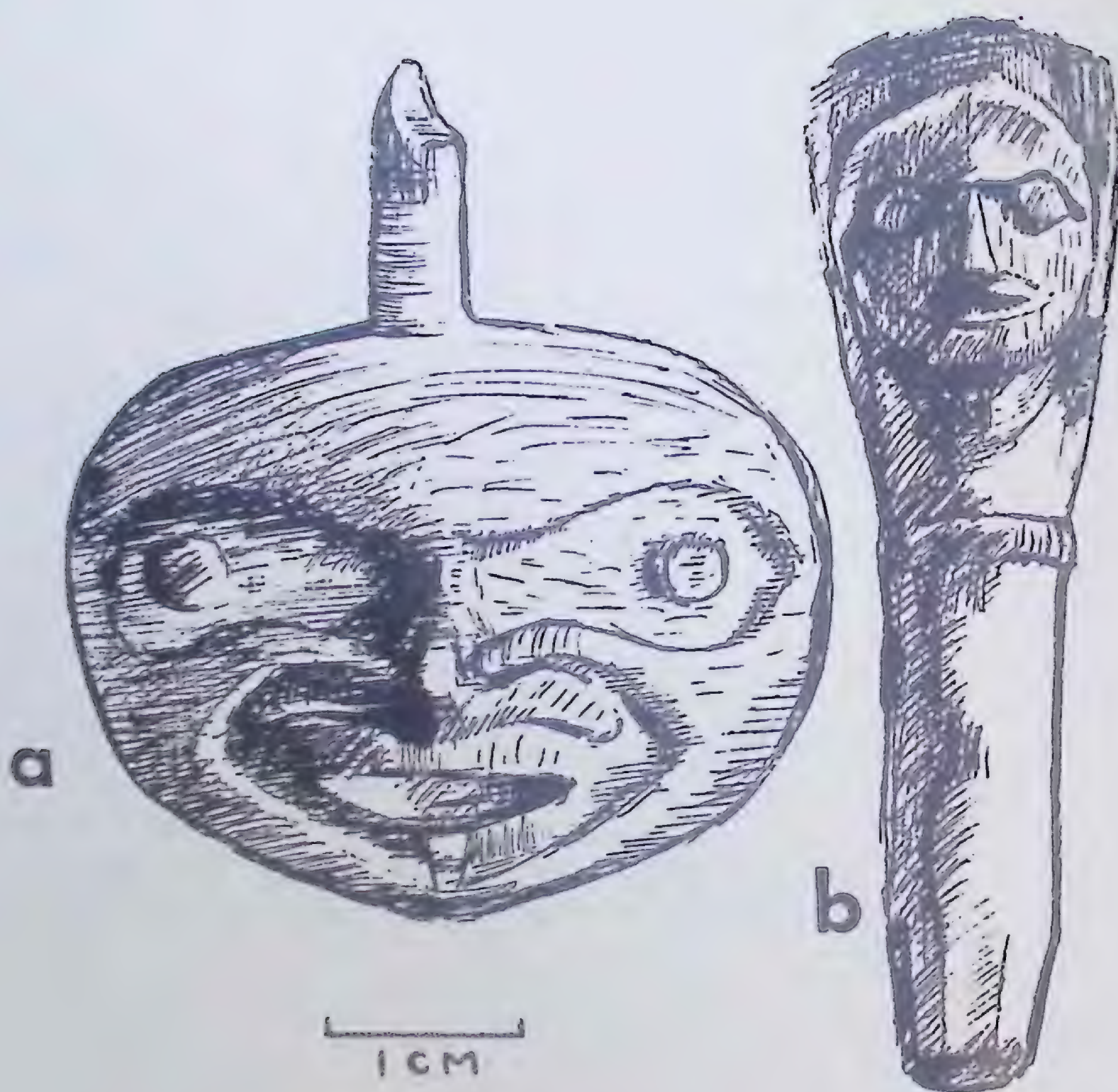


FIGURE 6—*Steatite Carvings*
(a) Human face unattached
(b) Human face on bowl of pipe
(Both specimens are from private collections)

Ground Slate Knives (2)—Ground slate knives are rare at Chase. Of two specimens, only one can be described in detail, as the other, seen in a private collection but not photographed, has been lost. The latter artifact was about 15 cm long and was in the shape of a flat point with two cutting edges each doubly bevelled, and it had a deep concave base producing two spurs.

A second slate artifact is a large tanged knife. It measures 21.0 cm long and 6.2 cm wide. The wide blade is ground to produce six facets and is smoothly finished, except for the tang and basal region, which is rough. The roughness, which extends beyond the shoulders and forms a triangular area on the blade, suggests that the final polishing took place after the artifact was hafted.

Ground slate knives occur sporadically at Kamloops (Smith 1900, p. 414) and not at all in the Upper Columbia sites or the McNary Reservoir (Collier *et al.* 1942; Osborne 1957, p. 65). Smith (1899a, p. 140) reports a considerable amount of ground slate from Lytton. Surface collections from sites on the Fraser River between Lytton and Kelly Creek contained only two pieces, and recent excavations in the stratified Nesikep Creek site (EdRk:4) (Sanger 1964) midway between Lytton and Lillooet did not uncover any ground slate.

Stone Saws (4)—Although there are no artifacts that are definitely saws, four slabs of phyllite (EeQw:1-15) included with Burial 3 may have been intended for sawing. The slabs are rectangular and measure 20 cm by 12 cm by 1 cm. Stone saws are found infrequently. Smith notes several in his Lytton collection (1899a, p. 143) but remarks on their absence at Kamloops (1900, p. 417). The greater incidence of saws in the Lytton region is probably related to the jade celt manufacture in that area.

Smooth Pebbles (3)—Three small, smooth pebbles were associated with Burial 3. Teit (1930, p. 196) reports that smooth pebbles were often picked up and kept as fetishes.

Smoothed pebbles are also reported as grave additions from Lytton (Smith, 1899a, p. 160) and from the McNary Reservoir (Osborne 1957, p. 68).

Pigments—Ochre was associated with Burials 4 and 5 and noted in various collections. A small chunk of white pigment, possibly volcanic ash, was found with Burial 4, and a larger piece of red ochre or hematite was associated with Burial 5. A private collection includes a sizable piece of red ochre, which was allegedly found in a birchbark basket fragment.

Ochre stains appear on several artifacts in a collection, although the collector's children, in playing with the material, may be responsible for the colouring.

Red ochre is reported from The Dalles (Strong *et al.* 1930, p. 117), the McNary Reservoir (Osborne 1957, p. 91), the Upper Columbia (Collier *et al.* 1942, p. 76), Cache Creek (Borden 1956), Lytton (Smith 1899a, p. 155), and Kamloops (Smith 1900, p. 424, 430). Osborne (1957, p. 96) also records green (from tuffaceous sandstone) and white (volcanic ash) pigment from the McNary Reservoir.

Quartz Crystals—Several quartz crystals, apparently unworked, are not in a photograph of a private collection.

Steatite Bead (1)—A small fragmentary steatite artifact, associated with Burial 6, is 2.0 cm long and 1.5 cm wide. The ends of the object are squared off by grinding. The piece is hemi-cylindrical in cross-section and is grooved the length of the flat surface. This piece is decorated with a single zigzag line at each end and three sets of incised lines in groups of five.

Steatite Serpent (1)—A serpent, carved of dark green steatite (A680), is 14.75 cm long and 2.5 cm wide. The carving evidently represents a rattlesnake with the rattles indicated by six incised encircling lines. A 'V' incised on both the dorsal and ventral sides separates the head from the body, and the eyes are mere slits without further detail.

Steatite Bears (2)—Two figurines, probably intended to represent bears, are carved in steatite (A677, A678; Plate VI). The smaller figure (A678; Plate VI, b) is 5.0 cm high and 2.5 cm wide. The head, tilted upward, is the most intricately carved portion of the figure. Small, erect, pointed ears are set off by a deep line incised from one side of the head to the other. There is a thin eyebrow ridge which broadens as it approaches the centre of the face, where it forms the beginning of a snout. Another line is incised below the eyes.

The eyes are lenticular, tending to flatten on the lower edge, with a large iris in bas-relief following the outline of the eye. The mouth is open with prominent lips, and eight shallow lines incised into each jaw represent teeth. Nostrils are not represented on the bulbous nose.

A deep incision separates the head from the body and is the only trace of a neck. In contrast with the head, the body is rudimentarily carved. A band curves from the back of the neck to form the hind quarters, upon which the figurine rests. Branching off the upper portion of this band are the forelimbs, which slope down toward the base of the figure and then bend upward at the elbow. Forepaws rest on either side of the abdomen and incised lines indicate claws. The hind legs curve around to the front but do not meet; between their extremities a hole is drilled 1 cm deep and 0.8 cm wide. A larger hole, 1.25 cm deep and 1.25 cm wide, is drilled into the base. These holes do not connect.

The second figure (A677; Plate VI, a) differs from the carving discussed above in both size and complexity. It is 7.5 cm high and 3.25 cm wide. The head of this bear is tilted upward although not to the same degree as that of the small sculpture. The ears are neither so pointed nor so high as those of the smaller figure, but the eyebrow ridges are more prominent. The eyes approximate the classic Northwest Coast type (Duff 1956, p. 51) in that they are disproportionately large, with the upper lid forming a crescent extending from the snout almost to the incised line of the neck. The iris is small and circular and is carved in relief. Directly below the iris the eyelid dips abruptly and then rises to meet the upper lid. There is a shallow depression below the eyes. The muzzle ends in a nose, complete with two nostrils separated by a septum. The mouth is open, the lips are prominent, and the teeth curve into the jaws. The canines are represented by two solid bars of stone, and sixteen

other teeth are carved in relief on the mandible. There is a roughness between the canines to represent incisors.

A constriction separates the head from the body. The forelimbs and paws are in the same position as those of the smaller animal. Hind limbs are absent, and there are no holes drilled into the base. A groove encircles the figure two centimetres from the base.

Bird Bowl (1)—A zoomorphic bowl, representing a bird, is made from green steatite (Plate V). Its exact dimensions cannot be given as no scale was included in the photograph from which this study was made. The carving, however, fits into the palm of the hand.

The head is tilted upward and is not intricately carved. There is a pronounced ridge over the eyes, which are large and circular and have a single spur slanting in towards the beak. The iris occupies almost the entire eye and is in slight relief from the eyelids. A circular hole drilled into the top of the head is possibly a receptacle for feathers or similar decorations. The beak is solid, but upper and lower mandibles are separated by a line whose anterior portion curves sharply downward, as in the bill of a predatory bird.

A constriction separates the head from the body. The back is vertical down to the flaring tail where the feathers are represented by a series of parallel lines. Legs with four toes are carved in relief on the sides of the body. The wings form the sides of the bowl, and incised lines indicate the feathers. A heavy line represents the shaft, and barbs branch off at right angles. The bowl is round and only deep enough to hold a few ounces of liquid. It is more shallow at the front than elsewhere, and a series of vertical parallel lines decorates the front rim. Although the species of the bird cannot be definitely identified, the hooked beak suggests a bird of prey.

Human Figure Bowl (1)—Among the carved steatite objects is a human figure bowl of dark-coloured steatite, measuring 12.5 cm by 6.4 cm (Plate VII).

The large head tilts upward and has just a suggestion of a protruding topknot. The eyes, which are long and curved with narrow irises, are carved in relief and set into a continuous groove that extends from ear to ear. Exaggerated cheek furrows continue to the nose and accentuate still further the broad alae of the hooked nose. The mouth is open, displaying a tongue and teeth which are carved into the gums. The back of the head is flattened, and the ears are indicated by slits. A constriction between the head and body represents the neck.

The body is carved on both the dorsal and ventral sides. A bifurcating line with horizontal notches is carved in relief down the centre of the back; the left arm continues past the shoulder and ends as a serpent's head above the right shoulder. At the base of the figure the buttocks of a squatting human are carved. The front of the figure is carved to represent the clavicles articulating with the sternum; the lowest ribs join the sternum in a cone.

Located below the chest, the bowl is formed by the lower ribs on the top, the thighs on the sides, and the lower legs on the bottom. The depression has been formed by gouging out the abdomen. Only if the figure were placed on its back could the shallow bowl hold any appreciable amount of liquid.

Human Face (1)—A small steatite face, 2.8 cm high and 3.4 cm wide, is carved in bas-relief (Figure 6, a). The small topknot, set off from the scalp by an encircling groove, was damaged prior to excavation. The prominent eyebrow ridges and bulging irises between recurving eyelids are typical of the steatite carving complex outlined by Duff (1956). The nose is prominent and hooked, with flaring alae accentuated by the continuation of the deep cheek furrows. Teeth are not carved into the broadly 'smiling' mouth, nor are the lips overly prominent. A prominence in the centre of the lower lip suggests the tongue.

Face on Pipe (1)—One of the tubular steatite pipes has a small face carved on the bowl (Figure 6, b). The face is almost circular. The large eyes have oval irises between recurving upper and lower eyelids. The nose is hooked, and, as in the previously described face, deep cheek furrows accentuate the broadly flaring alae. A slightly open mouth is carved with prominent lips, but no teeth are represented. Beneath the chin, and continuing to the pipe stem, is a series of parallel lines perpendicular to the long axis of the pipe.

One of the few comprehensive studies of an aspect of Northwest Coast prehistory concerns the steatite carving complex (Duff 1956). The carvings from Chase are important because they are the only steatite sculptures from a site known to be recent. Some relationship between these stone carvings and those of the Marpole phase of the Fraser Delta is likely. Since examples from the Marpole phase have been dated to the First Millennium B.C. (Borden 1950, p. 18-19, 23), a remarkable continuity of some two thousand years is indicated.

ANTLER INDUSTRY

The antler industry forms an important part of the total artifact assemblage. A total of fifty-four pieces are described under the following headings: Digging Stick Handles, Harpoon Heads, Points, Wedges, Clubs, Sap Scraper, Gorget, Haft, Tine Flakers, Handle Carvings, and Miscellaneous.

Wapiti (*Cervus canadensis nelsoni*) antler is probably used exclusively, since no pieces are definitely of deer antler. Generally, the artifacts exhibiting a flattened cross-section are manufactured from the antler cortex, and the objects having a circular or ovoid cross-section are fashioned from tines. The antler is worked by sawing, hacking, whittling, incising, drilling, and grinding. Many of the artifacts are decorated with geometric motifs, and some are carved into zoomorphic and anthropomorphic shapes.

Digging Stick Handles (15)—Digging stick handles, made from tines of wapiti antler, are circular to oval in cross-section (Plate VIII). In every example, a circular hole is drilled through the centre of the handle, approximately equidistant from the extremities. The holes average 1.75 cm in diameter on the upper surface and slightly more on the under side. The contracting perforation apparently causes the handle to be jammed onto the tapering proximal end of the digging stick when pressure is applied from above (Smith 1899a, p. 138). A feature common to all specimens is a thumb groove worn into the excurvate edge of the handle.

Open sockets have been cut into the under side of the proximal (wider) end in thirteen handles and into both ends in one handle. A slot five centimetres deep has been incised into the distal end of one specimen. The carefully made sockets suggest that the handles were dual purpose tools, serving perhaps as knife hafts in addition to their primary function. None of the jade celts is small enough to be inserted into the sockets, although many of the leaf-shaped chipped points would fit.

All the handles are decorated. A series of long parallel lines, incised at right angles to the long axis of the artifact, is the most common motif, closely followed by a ticked line design (long parallel lines with short perpendicular spurs). Cross-hatching and an X-motif also occur. One handle (Plate VIII A, c) is embellished with a delicately carved head of an unrecognizable creature, which has a bulbous nose and large round eyes connected by two incised lines.

Antler digging stick handles are present in the assemblages of all major Plateau sites with the exception of The Dalles (Strong *et al.* 1930). Round to elliptical conically constructed holes are reported from Lytton (Smith 1899a, p. 137) and Kamloops (Smith 1900, p. 411); rectangular holes occur on the Upper Columbia specimens (Collier *et al.* 1942, p. 82-84). The handles from the McNary Reservoir have elliptical holes and are not always associated with female burials (Osborne 1957, p. 84). The open sockets in the under surface of the handles from Chase appear to be a regional specialization as they have not yet been reported elsewhere.

TABLE 8—*Dimensions of digging stick handles*

Artifact No.	Length (cm)	Width (cm)	Diameter of Perforation (cm)	Plate Reference
EeQw:1-101.....	28.0	2.5	1.75	VIA, c
EeQw:1-65.....	27.0	3.0	1.75	VIA, b
EeQw:1-66.....	28.0	2.7	1.75	VIA, a
—	35.0	3.5	1.75	
—	35.0	3.5	1.75	
A670.....	10.0	1.5	1.75	

Harpoon Heads (10)—Of the ten harpoon heads, five are complete and five are fragmentary (Figure 7, b, c). Two distinct forms of heads (A and B) are evident. The six Group A examples are non-toggling, unilaterally barbed points with a retrieving-line hole gouged in the lower half of the shank. The bases are rounded, and the two barbs are high and isolated; there are neither lateral line guards nor shoulders on the base (Figure 7, c). By using the antler cortex a flat cross-section was produced. Group B harpoon heads are long (one specimen measures 35.0 cm) and round in cross-section and have basal notches but no visible means of line attachment (Figure 7, b). The three or four barbs are high and are isolated and unilaterally arranged. These appear to resemble the barbed heads used in the composite harpoons, illustrated by Teit (1909, p. 523) for the Shuswap.

Both harpoon head types exhibit similar decorative motifs. Short groups of three and four parallel lines are incised into the under side of the barbs

and into the shank. All these lines are perpendicular to the long axis of the implement.

Table 9 includes the dimensions of Group B heads; no measurements are available for the Group A examples.

Harpoons occur mainly in the Canadian Plateau. Smith describes examples from Lytton (1899*a*, p. 137) and Kamloops (1900, p. 411, 435), which are similar to the Group A specimens from Chase. A series of eight harpoon heads recovered from Upper Columbia sites is divided into three types, with a Type C corresponding to Group A from Chase (Collier *et al.* 1942, p. 79). Group A heads are also in collections from Lillooet. Group B heads are noted only in the ethnographic literature mentioned above.

TABLE 9—*Dimensions for Group B harpoon heads*

Length (cm)	Width (cm)	Comments
35.0	1.75	Complete, four barbs (Figure 7, b)
14.0	1.75	Complete, three barbs
6.8	1.75	Fragment, two barbs
15.0	1.75	Fragment, three barbs

Points (11)—There are eleven rather massive non-barbed antler points (Table 10). They are long, flat in cross-section, parallel-sided, and tapered gently to a sharp point. Three of the eleven points have notched bases, and none are decorated.

The function of these points is not certain; they may have tipped spears or have been used as daggers and hand-held. Except for specimens from Lytton and Kamloops, illustrated by Smith (1899*a*, p. 149; 1900, p. 423), these artifacts have not been noted elsewhere.

TABLE 10—*Dimensions of antler points*

Artifact No.	Length (cm)	Width (cm)
EeQw:1-134.....	20.0	4.0
EeQw:1-141.....	19.0	3.0
EeQw:1-39.....	15.0	3.0
	23.5	4.5
	27.0	5.0
	18.5	3.7
	22.0	3.7
	19.0	4.0
	17.5	2.7
	20.0	4.0
	9.5	2.7

Wedges (3)—Three wedges, manufactured from the beam of wapiti antler, and unifacially bevelled, have straight shafts. One example includes the burr. None of the wedges exhibit extensive use or battering.

Antler wedges are found throughout the Plateau but usually in limited numbers. Of the four wedges described from the Upper Columbia, two are

unifacially bevelled (Collier *et al.* 1942, p. 86). Fragmentary unifacially bevelled examples are reported from the McNary Reservoir (Osborne 1957, p. 85). Wedges occur in greater abundance at The Dalles (Strong *et al.* 1930, p. 70), at Lytton, and at Kamloops (Smith 1899*a*, p. 141; 1900, p. 414).

TABLE 11—*Dimensions of antler wedges*

Artifact No.	Length (cm)	Width (cm)
EeQw:1-36.....	23.0	5.0
A668.....	21.0	4.0
A684.....	19.0	5.0

Clubs (3)—Two complete antler clubs and a fragment of a third were unearthed (Plate VII, fig. 7a). They were made from the beam of wapiti antler and an adjoining tine that is sharply bevelled to produce a cutting edge. Perforations in the handles suggest the use of a wrist thong. On one club (A667b; Plate IX, b) the hole is square; into the other specimen (A679) a circular hole has been drilled. The striking head is all that remains of the fragmentary club (A681, Figure 7, a).

All three clubs are elaborately decorated. One club (A679; Plate IX, a) was modified to represent a bird by creating a stylized eye with a dotted circle for the iris and by converting the tine into a bill. Along the handle is a series of circle and dot motifs, interspersed between short parallel lines in clusters of three and four. Two vertebrae-like designs, carved in relief, extend three-quarters of the way along the back, enclosing alternate crosses, circle and dot, and short parallel line motifs. A biconically drilled hole through the back of the club, above the tine, may have served as an attachment for a feather decoration.

The second complete club (A667b) has a less intricate design and is more obviously an animal. The figure has large round eyes, an open mouth, and two lines setting off the muzzle. Two sets of encircling zigzag lines have been carved on either side of a wide groove behind the head. A fine encircling line has been incised behind the proximal zigzag line.

The third club (A681) is fragmentary. Only a zoomorphic head and sharpened tine remain. The animal represented has an open mouth, large circle and dot eyes, and small ears (Figure 7, a). A groove is carved behind the head. Two parallel lines joined by short perpendicular ones are incised between the recessed groove and the tine. A few incised lines are visible on the top surface above the tine.

Smith (1899*a*, p. 149) illustrates one undecorated tine club from Lytton. With this single exception, antler tine clubs are not reported from other Plateau sites.

TABLE 12—*Dimensions of antler clubs*

Artifact No.	Length (cm)	Width of handle (cm)	Length of tine to back of club (cm)
A679.....	35.0	2.0	9.5
A667b.....	39.5	3.5	8.5

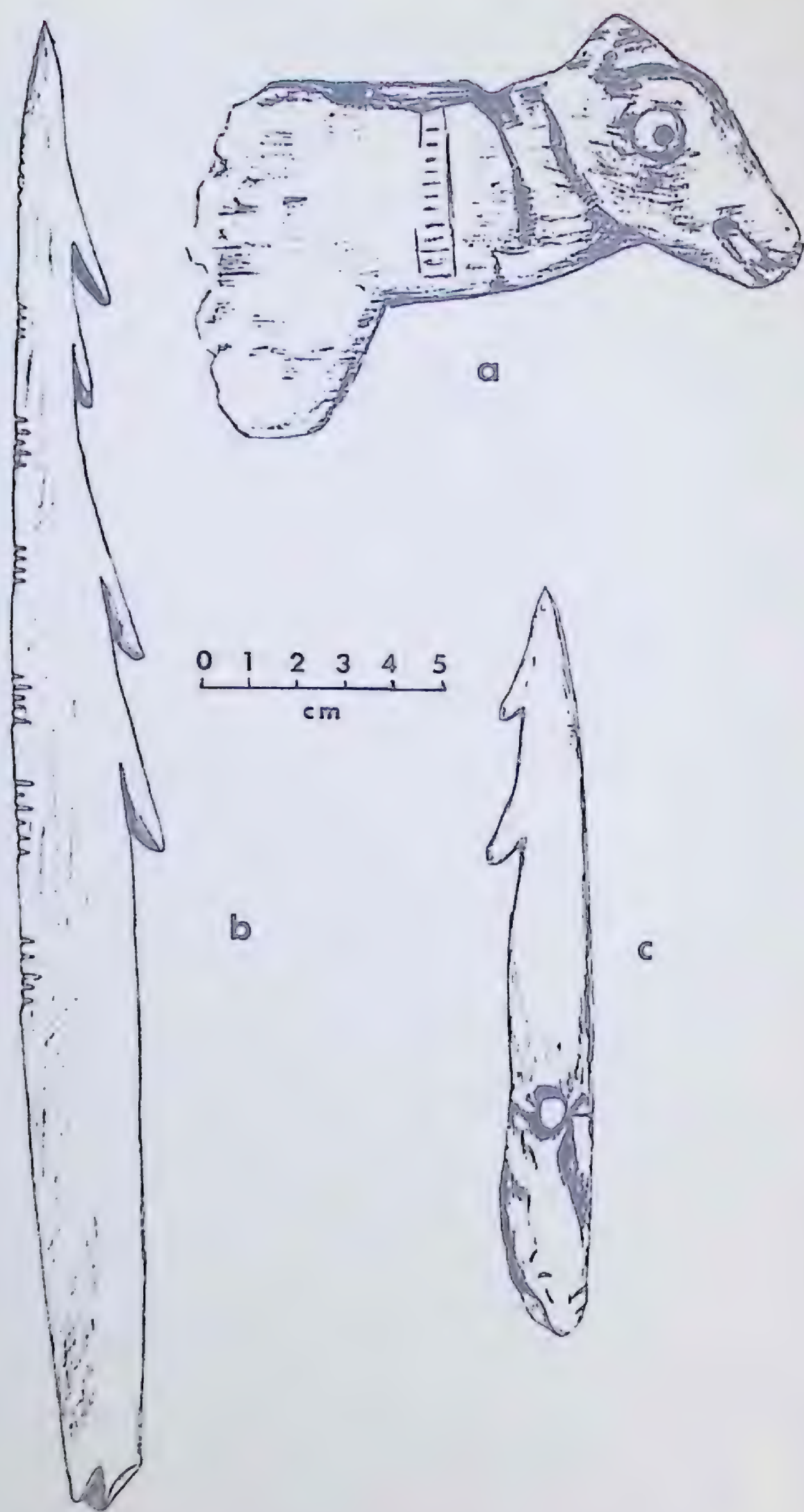


FIGURE 7—*Antler Artifacts*

- (a) Decorated head of antler tine club (Kamloops Museum Collection A681)
- (b) Group B harpoon head
- (c) Group A harpoon head
- (Specimens (b) and (c) are from private collections)

Sap Scraper (1) (Plate X A, a)—A single scraper-like implement, associated with Burial 1 and made from the cortex of wapiti antler, measures 33 cm long and 4 cm wide. Both ends indicate use; the pointed end may have been used for prying away the outer bark, and the broad end for scraping the edible inner tissue (Teit 1900, p. 233). The pointed end is made into a zoomorphic head by two curving lines representing an eye and by a shallow groove with short perpendicular lines for a mouth. Other decorations consist of long parallel lines extending across the width of the artifact in groups of three and four, and an area of cross-hatching. All the parallel line groups are incised at right angles to the long axis of the scraper. Sap scrapers were found by Smith (1900, p. 411) at Kamloops.

Gorget (1)—A gorget-like ornament made of the cortex of antler beam measures 6.7 cm by 4.0 cm. It is decorated with three vertebrae-like designs that divide the artifact lengthwise.

Haft (1)—One antler tine haft could be examined only from a photograph. The possibility of digging stick handles serving also as hafts has been discussed elsewhere (page 111).

The proximal end of the tine has been slotted to admit a knife or point. It is 11.6 cm long and 1.9 cm wide and is decorated by a series of ten ticked lines (long parallel lines with short perpendicular spurs), which appear to be encircling the artifact. In addition, the photograph suggests some parallel lines on the under surface.

Tine Flakers (?) (2)—There are two tips of tines that have been hacked off. The unnaturally blunted distal ends may indicate use as flakers. The larger object, 15.7 cm long and 3.1 cm wide, is not decorated; but the smaller artifact, 13.5 cm long and 3.0 cm wide, is embellished by a series of short parallel lines.

Handle Carvings (2)—Two examples of anthropomorphic antler carvings are in the assemblage (Figure 8). Both appear to have been the end of a slender-handled object.

The more intricate carving (Figure 8, b) is of two naturalistic heads one above the other carved into death-like expressions. Both faces are similar with closed oval-shaped eyes, high and wide cheek bones, broadly flaring alae, drooping mouth, and a series of pits in the cheeks and forehead suggesting tattoo marks. The second carving is of a single head (Figure 8, a). It is less realistic and simpler in outline. The eyes are rectangular and in bas-relief with centre dots as irises. A line connects the eyes. The alae are indicated, but the remainder of the nose is absent.

Miscellaneous Antler Objects—A peculiar object was associated with Burial 1 (Plate X A, f). The artifact, formed by a portion of antler beam and a tine meeting at an angle of 20 degrees, has an overall length of 30 cm. The section of beam is 13.5 cm long, 2.5 cm to 3.0 cm deep, and 2.0 cm wide. A slotted perforation in the distal end of the tine may indicate a wrist lanyard and therefore the handle of a tool. The hafted section of the implement would be fixed to the short section of beam. The distal end of the implement, assuming the pierced end to be the handle, may have been slotted, and could have functioned as a sleeve. No artifact likely to have been fitted

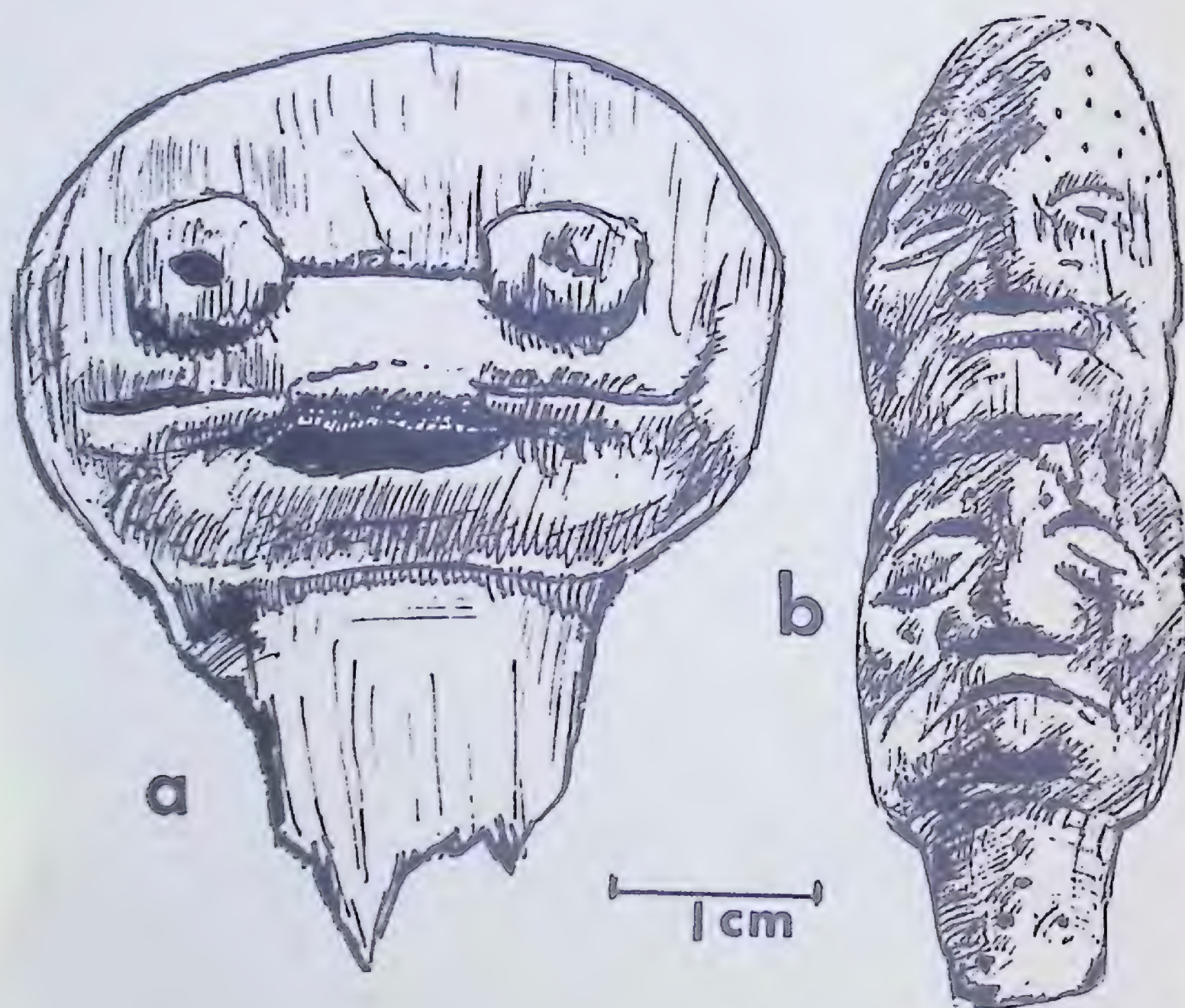


FIGURE 8—*Handle Carvings in Antler*
(Specimen (a) is from the University of British Columbia Collection)
(Specimen (b) is from a private collection)

into this puzzling piece was present in the grave. Since no description in regional archaeological or ethnological reports mentions similar objects, it is impossible to suggest any specific function for the artifact.

A very thin H-shaped portion of antler was also present in Burial 1 (Plate X A, b). It is 8.0 cm long, 4.0 cm wide, and 0.2 cm thick.

Another fragment of antler associated with Burial 1 (Plate X A, c) may be a portion of a carving or a decorated object, of which only the suggestion of an eye remains. The fragment is 3.5 cm high and 0.6 cm thick. The width tapers from 3.5 cm to 0.75 cm.

A fourth fragmentary antler object found with Burial 1 (Plate X A, d) is 2.75 cm. long, 1.0 cm wide, and 0.2 cm thick. It is pierced once near the remaining end. The artifact is evidently a fragment of a larger object of unknown function.

A long parallel-sided object, perforated at the base and broken at the tip, is in a private collection. It is 20.0 cm long and 2.2 cm wide. This piece, which may have been a point, is not decorated.

The last piece, of unknown function, is a slender spatulate object of antler tine which has been unilaterally bevelled at one end to produce a thin, sharp edge. The artifact is 21.0 cm long and 1.5 cm wide.

BONE INDUSTRY

The bone industry of Chase is represented by 68 artifacts. They will be discussed under the following headings: Awls and Points, Leister Points, Needles, Creasers, Scrapers, Chisels or Wedges, Clubs, Drinking Tubes, Pendants, and Miscellaneous.

Wapiti (*Cervus canadensis nelsoni*) and mule deer (*Odocoileus hemionus hemionus*) bone provided most of the raw material. Cannon and other leg bones were utilized most frequently, although rib, penis bone of bear, and scapula were also used. Manufacturing techniques include splitting, cutting, scraping, sawing, and grinding.

Awls and Points (37)—This broad category includes a number of pointed bone objects whose precise functions are often impossible to ascertain from the photographs. It is possible, however, to recognize at least ten awls in the sample.

Six of the ten awls recognized show traces of an epiphysis. In every instance the epiphysis has been split, and in some cases ground. The type of bone in four of the six awls with attached epiphysis is recognizable; in the other two it is not, either because too little of the epiphysis remains, or because insufficient detail is available in the photograph. The unidentified examples are cannon bones with three instances of a distal and one instance of a proximal epiphysis still remaining on the artifact. Other awls are made from unidentifiable long bones. No ulna or scapula awls are present. The mean length of the sample of ten is 11.9 cm.

Long bone awls are common in most Plateau sites and generally comprise a high percentage of the bone industry. Sites at The Dalles (Strong *et al.* 1930, p. 55), Lytton (Smith 1899a, p. 148), and the Upper Columbia (Collier *et al.* 1942, p. 80, 81), all contain many examples. Ulna awls are

scarce, being confined to single examples from Kamloops (Smith 1900, p. 420), the Upper Columbia (1942, p. 81), and the McNary Reservoir (Osborne 1957, p. 83).

Five long, sturdy points averaging 19.4 cm are in the sample. They may be lance heads or daggers and are similar in form and dimensions to the long antler point (page 112). A bone point associated with Burial 3 is manufactured from the hind cannon bone of wapiti. It is 19.5 cm long, 2.5 cm wide, and averages 0.75 cm in thickness.

Three small flat points, which may be arrowheads, are associated with Burial 3 (Table 13).

TABLE 13—*Dimensions of bone projectile points*

Artifact No.	Length (cm)	Width (cm)	Thickness (cm)
EeQw:1-135.....	6.25	1.2	0.10
EeQw:1-142.....	7.0	1.1	0.15
EeQw:1-113.....	7.1	0.75	0.15

The remaining 19 bone points range in length from 5.1 cm to 15.9 cm. A number of well-finished pieces with notched bases and a circular cross-section may have armed arrows and spears; the shorter examples could have served as leister barbs and fish gorges. None of the 37 points and awls are decorated.

Leister Points (3)—Three sharp points are associated with Burial 3 (Plate V, lower right). The longest piece, round in cross-section, is 11.0 cm long and 0.5 cm thick; the two smaller points, also circular in cross-section, are 5.0 cm long and 0.4 cm thick. All three artifacts are sharply pointed at one end and bevelled at the other. These pieces are evidently the central point and lateral barbs of a leister or fish spear, the wooden portions and lashing having disintegrated (Teit 1900, p. 252, Figure 232; 1909, p. 525).

Needles (2)—The needles are long, slender, and flat, and both have a single eye formed by incisions from both faces. In one example the eye is proximally located. The needle is 10.0 cm long and 0.25 cm wide. Another needle measures 14.0 cm by 0.5 cm and has an eye length of 1.7 cm. As both extremities are pointed, it is not clear whether the eye is located distally or proximally; perhaps the needle was reversible. Neither needle is decorated. Two pierced bear penis bones described under 'Pendants' may also be needles.

Bone needles are not common in Plateau sites. They are scarce along the Upper Columbia (Collier *et al.* 1942, p. 81), at the McNary Reservoir (Osborne 1957, p. 86), at The Dalles (Strong *et al.* 1930, p. 62), at Cache Creek (Borden 1956), and at Kamloops (Smith 1900, p. 421). Like the needles from Chase, the few specimens from the above sites are flat in cross-section. Long slender needles, rounded in cross-section and elaborately embellished and polished, occur in assemblages from burial sites between Lytton and Lillooet. A needle illustrated by Smith (1899a, p. 149, Figure 79) from a Lytton site lacks the decoration but is similar in outline to those found to the north.

Creasers (7)—Seven creasers made from wapiti and deer rib bone were found. One example is shouldered, but the remaining six have parallel sides gently tapering to a point. Although these artifacts approximate a modern knife in outline, the absence of a keen edge suggests creasers used in the manufacture of basketry. The creasers are not decorated.

Creasers are reported from the Upper Columbia sites where they are made from deer and wapiti rib bone (Collier *et al.* 1942, p. 87). They are not recorded from other Plateau sites, although Smith (1900, p. 412) illustrates some flat bone implements which may be creasers from a site near Kamloops.

TABLE 14—*Dimensions of bone creasers*

Artifact No.	Length (cm)	Width (cm)
EeQw:1-34.....	20.0	1.5
EeQw:1-153.....	16.0	2.0
EeQw:1-32.....	16.6	2.5
EeQw:1-114.....	12.25	1.0
	15.4	2.0
	10.6	1.5
	9.6	1.4

Scraper (1)—One bone scraper was found. Made from deer scapula, it shows considerable use.

Chisels or Wedges (3)—There are three bone chisels or wedges. One is made from a split wapiti cannon bone. The bit is straight and asymmetrical and does not show extensive use. Another chisel (A686), made from a section of wapiti long bone, appears to have been extensively utilized.

TABLE 15—*Dimensions of bone chisels or wedges*

Artifact No.	Length (cm)	Width (cm)
EeQw:1-38.....	19.0	4.0
A686.....	17.0	3.0
	11.0	2.2

Clubs (2)—There are two whale rib bone clubs (Figure 9, a). One complete specimen (667a), 58 cm long and 5 cm wide, narrows slightly at one end to form a handle. A ring, presumably for the attachment of a wrist thong, extends from one side of the handle. The top of the handle is carved on both faces into a head surmounted by a hat or mask. The headpiece has been biconically perforated, perhaps for the attachment of another decoration. The blade of the club is undecorated.

The head is probably meant to be anthropomorphic. The eye is oval in outline and is not unduly large; there are three oblique lines incised between the eye and the 'chin.' The lowest and shortest line could be interpreted as a mouth. The headdress or mask is very similar to the Nootkan bird masks

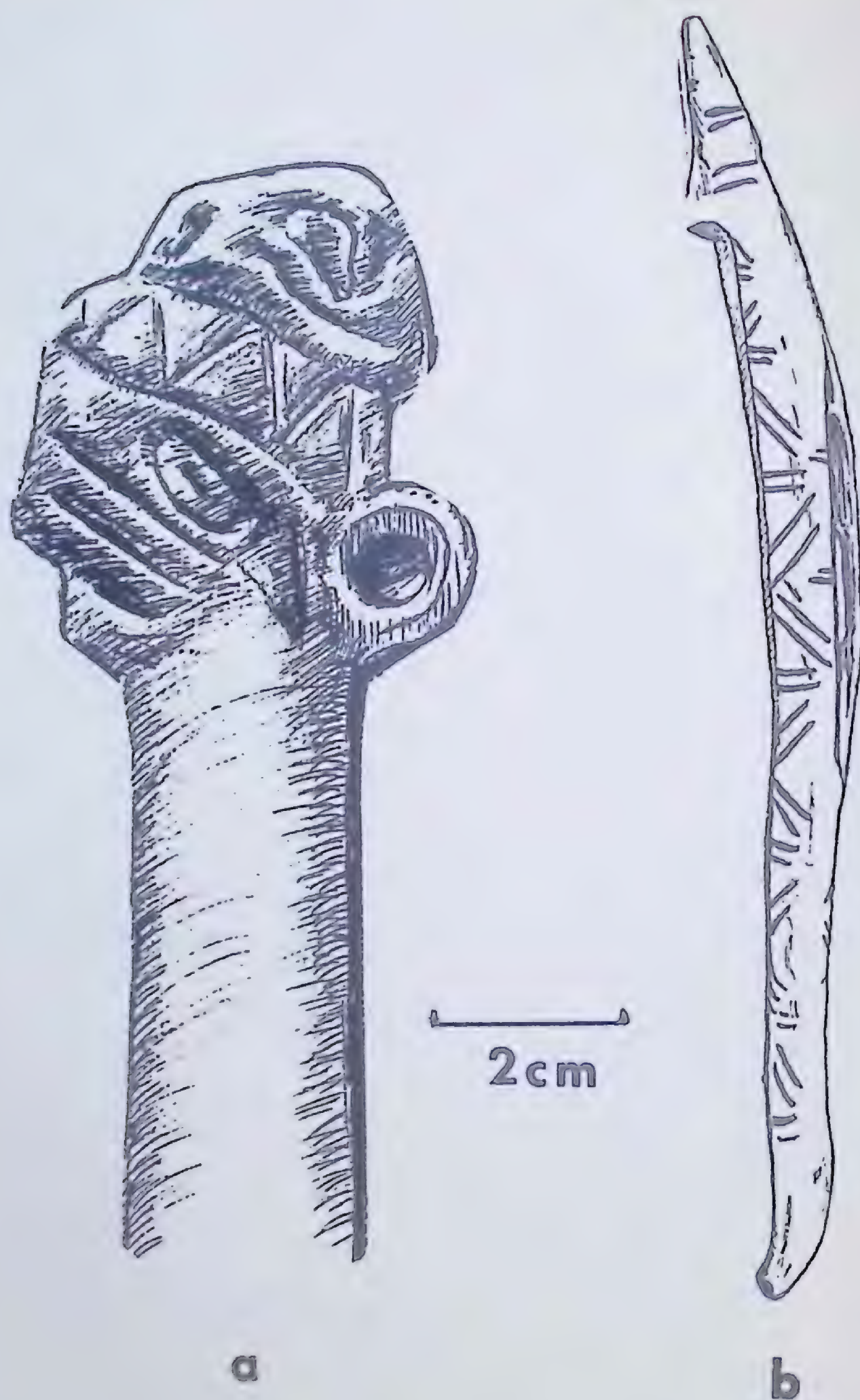


FIGURE 9—*Bone Artifacts*

- (a) Handle of whalebone club (Specimen from Kamloops Museum Collection A667b)
(b) Bear penis bone pendant (Kamloops Museum Collection A682)

seen on the whale bone clubs from the Coast (Boas 1907, p. 403-412). A broad band between the eye and the headdress is covered by a zigzag line.

The second club, an undecorated fragment, measures 24.0 cm long and 5.8 cm wide.

Whale bone clubs have a wide distribution. They are reported from Kamloops (Smith 1900, p. 422), the Upper Columbia (Collier *et al.* 1942, p. 80), and The Dalles (Strong *et al.* 1930, p. 57).

As whale bone clubs are usually associated with coastal groups, especially the Nootka and Kwakiutl (Drucker 1955, p. 94), it is perhaps pertinent to compare the club from Chase with a series of forty-six Nootkan clubs illustrated by Boas (1907, p. 403-412). A head surmounted by a mask is carved on the handles of all the clubs, but though the one from Chase is probably meant to be anthropomorphic, the heads of the Nootkan clubs are generally zoomorphic and only rarely anthropomorphic. The animal heads have large almond-shaped eyes; the human head from Chase has small, more rectangular eyes. The Nootkan clubs have a perforation for a wrist lanyard; the specimen from Chase has a carved protruding ring.

Some whale bone clubs found in Plateau sites resemble the Nootkan examples; others are like the one from Chase. Smith (1900, p. 422) illustrates two clubs from Kamloops which have human heads and rectangular eyes resembling the Chase specimen. A club combining the rectangular eye with zoomorphic carving is reported by Collier *et al.* (1942, p. 80) from the Upper Columbia. Boas (1907, p. 404, 405) illustrates whale bone clubs from various Columbia River sites that are virtually identical with the Nootkan examples.

The differences between the Kamloops-Chase area clubs and the Nootkan examples might suggest that another coastal group manufactured the clubs, which were then traded inland to the Kamloops region. Despite considerable digging, Smith did not recover any whale bone from Lytton, and none has been found in extensive excavations in sites between Lytton and Lillooet. Possibly the clubs reached the Kamloops-Chase area from the Kwakiutl or Bella Coola.

Drinking Tubes (3)—There are three bird bones that may be drinking tubes. One complete specimen, which is 7.5 cm in length, is square-cut at both ends. An incised perforation probably served for suspension. The fragmentary tubes are slightly longer. None of the pieces are decorated or marked.

Drinking tubes, often called whistles, are common in many Plateau sites. They are reported from Lytton (Smith 1899a, p. 154), Kamloops (Smith 1900, p. 412), the Upper Columbia (Collier *et al.* 1942, p. 87), and the McNary Reservoir (Osborne 1957, p. 87). Strong *et al.* (1930) do not mention drinking tubes from The Dalles.

Pendants or Needles (2)—Two slotted bear (*Euarctos americanus*) penis bones are in the assemblage (Figure 9, b). Both specimens have been pierced by incisions from the sides and if suspended would balance horizontally. As an alternate possibility, Teit (1909, p. 508) reports that among the Shuswap, bear penis bones were used as needles.

The decorative motifs on these objects are similar. One piece features a modification of a basic zigzag pattern of two lines along the long axis of the artifact. Instead of being a continuous line the pattern is interrupted at the high and low points. Beneath each apex caused by the intersection of a zig and a zag, two parallel vertical lines are incised.

The second specimen is similarly decorated, but more emphasis has been placed on vertical parallel lines. The elaborate decoration, the precise positioning of the perforation, and the round cross-section tend to suggest that these bone pieces are not needles, since the other needles from Chase are plain and flat and have the eye located at one of the extremities.

One pendant (A682) is 13.3 cm long and 1.0 cm wide. No measurements are available for the second specimen.

Bear penis bones have been found in various Plateau sites. Smith (1900, p. 429, Figure 375) illustrates two perforated and embellished penis pendants from Kamloops that are strikingly similar to those from Chase. Undecorated and unpierced bear penis bones are reported from the Upper Columbia sites (Collier *et al.* 1942, p. 92), and a series of four, identified as awls, are described by Garth (1952, p. 43) from Sheep Island in the McNary Reservoir region.

Miniature Bows (3)—Two slender, gently curved bone (or possibly antler) artifacts (Plate X B) are among the inclusions accompanying Burial 4. One of the pieces bears bilateral notches at both ends, and the other exhibits short projections at each extremity. The ends of a third artifact of similar configuration have been snapped off. On the under or concave surfaces of the two complete pieces, a number of naturally pointed fish bones, averaging 4 cm in length, are attached by pitch. The shape of the artifacts, as well as the sharp, slender bone points, suggests miniature bows and arrows. If this is indeed a valid interpretation, the association with an infant burial may indicate the inclusion of toys.

All three bows are decorated. One of the complete specimens (Plate X B, a) and the fragmentary example exhibit a similar decorative motif based on a vertebrae-like design in bas-relief and short parallel lines. The remaining bow (Plate X B, b) displays six groups of short parallel lines incised at right angles to the long axis of the artifact.

TABLE 16—*Dimensions of miniature bows*

Artifact No.	Length (cm)	Width (cm)	Thickness (cm)
EeQw:1-143.....	19.0	0.75	0.1
EeQw:1-144.....	14.25	0.70	0.1
	14.0	—	—

Miscellaneous Bone Objects. A narrow, split long bone is in the assemblage. The inner surface is heavily charred. The artifact is 28.0 cm long and is not decorated. Several split but otherwise unshaped mammal bones, which may be artifact blanks, are associated with Burial 3.

Among the objects recovered during excavation are three bird beaks and some assorted bird bones. Two of the beaks were associated with Burial 3 (Plate III B) and the third with Burial 4. One of the beaks is too fragmentary for identification, but the second may be the bill of the Hooded Merganser (*Lophodytes cucullatus*). The mandibular portion of a bill found with Burial 4 may be of the Red-breasted Merganser (*Mergus serrator*).

SHELL INDUSTRY

Dentalium

Seven pieces of cut *Dentalium* were observed in two strands around the neck of Burial 1. Gaps between the shells suggest the use of spacers of some more perishable material. Numerous examples of *Dentalium* are in private collections. None of the shells are decorated.

Dentalium is by far the most ubiquitous shell, occurring with great frequency in the Plateau. The shells vary in length from thin beads (Osborne, 1957, p. 108) to larger fragments up to several centimetres in length (Strong *et al.* 1930, p. 72). The segments may be absolutely plain as at Chase, or they may be decorated (Smith 1900, p. 431; Osborne 1957, p. 108).

Pecten caurinus

There are four whole pierced *Pecten* shells and many fragments. The complete shells, perforated below the hinge, may have been used as rattles; the smaller pierced pieces may be pendants. Some of the entire shells are up to 15 cm in length.

Pecten caurinus appears to be limited to the Canadian Plateau, as none has been reported from American sites. Smith (1899a, p. 157; 1900, p. 428) records perforated *Pecten* at his sites near Lytton and Kamloops and assumes the shells to be parts of rattles. Pierced *Pecten* shells are also present in the assemblage from the Mile 28 Ranch site, a burial site 28 miles north of Lytton (Figure 1). The discoverer reports finding several entire valves, nestled one inside the other, with the perforations in perfect alignment, lending support to the assumption that the large pierced *Pecten caurinus* shells were used as rattles.

Haliotis

There are numerous examples of *Haliotis* shell pendants, although none of the shells can be identified as Californian abalone. Two small pieces are each pierced once, and a larger pendant, measuring 9.5 cm by 6.8 cm, is perforated once at each of the two narrow ends.

The distribution of the *Haliotis* is limited. The shell occurs frequently in sites along the Columbia River (Strong *et al.* 1930, p. 73; Collier *et al.* 1942, p. 95; Osborne 1957, p. 109). The Canadian distribution is considerably less widespread. *Haliotis* has been found at Lytton, Spences Bridge, and Chase, but not at Kamloops, nor in sites between Lytton and Lillooet (Smith 1899a, p. 153; 1900, p. 426).

Two other shells that occur in Plateau sites are absent from Chase. *Olivella*, found at Lytton (Smith 1899a, p. 134) but not at Kamloops or

Chase, is frequently noted in Columbia River sites (Strong *et al.* 1930, p. 72; Osborne 1957, p. 108; Collier *et al.* 1942, p. 54). The second shell, *Glycymeris*, is apparently limited to the Columbia River sites (Osborne 1957, p. 109).

WOOD INDUSTRY

A number of wooden artifacts, including birchbark rolls, a birchbark container, a mask, matting, basket fragments, and a bark matting, were found at Chase.

Charred birchbark rolls are fairly common, although none were found by the field party.

Birchbark Container (Plate XI)—A flattened birchbark container was in association with Burial 5. The construction of the ends, as well as some upright stone pieces protruding through the side of the pouch, suggests that the artifact was originally cylindrical and was flattened by the weight of the cranium.

An X-ray photograph (Plate XI B) of the container reveals a number of stone artifacts, including a chipped bi-point, raw flakes, scrapers, and chipped knives. Also present in the pouch are bone and antler pieces. Unfortunately, a considerable amount of sand has filtered into the pouch. As sand has a refractive index similar to that of stone, the outlines of some of the artifacts are obscured.

The container is 38.0 cm long and 16.0 cm wide. As a cylinder, its diameter would have been approximately 10 cm.

Basket Fragments (?)—Excavation of Burial 3 revealed small sections of uncharred birchbark. The position of the fragments suggests a basket. Of interest was the presence of a human phalange among the fragments.

Mask (Figure 10)—The two fragments of a wooden mask found at Chase were a most unusual discovery. Unfortunately, the mask was encountered by a collector while he was digging with a shovel, and possibly portions of the mask were lost.

A piece of plain twined matting, found with the two wooden sections, bears a negative imprint of an eye. The matting is made from a sedge (*Cyperaceae* sp.).

Each of the two pieces of mask contains an eye, and one piece has a portion of the mouth. A partial reconstruction is possible on the basis of these fragments. The eyes are large and droop slightly at the corners. The pupils are large, round, and peg-like. Eyebrow ridges are pronounced. The mouth is open, and the lips are thick. Since no portion of the nose remains, it is not possible to reconstruct its shape. A red stain, probably ochre, is on both fragments.

The fragment including the left eye measures 12.4 cm long and 7.4 cm wide, and the right side measures 13.6 cm by 9.3 cm. The piece of matting is 8.5 cm long and 7.5 cm wide.

Identification of the mask is not definite. The solid 'peg eyes' certainly suggest the Sxwaixwe mask of the Coast Salish. Teit (1909, p. 578) discusses

the use of masks by the westernmost Shuswap groups which were influenced strongly by the Carrier Indians in their coastally derived ceremonials. The date of acceptance of the Carrier customs is given as the mid-19th century, a date which seems far too recent for Chase.

TOOTH INDUSTRY

Teeth of bear (*Euarctos americanus*), beaver (*Castor canadensis*), and possibly a marmot (*Marmota* sp.) are in the assemblage.

Beaver Incisors (2)—Two split mandibular incisors of beaver were found with Burial 3 (Plate V). The dimensions of these artifacts are 5.1 cm by 0.4 cm. No beaver tooth dice are present.

Incisors of a Small Rodent (2)—Also associated with Burial 3 were two split incisors of a small rodent, possibly a marmot. One fragment is 4.0 cm long and the other 2.25 cm long. Both teeth are 0.2 cm wide.

Bear Canine (1)—A black bear canine still embedded in the left half of the mandible, has the tip ground down indicating use, possibly as a graver.

The tooth industry is surprisingly limited at Chase. Most conspicuous is the absence of wapiti or deer canine tooth pendants or necklaces. Pendants are reported from Lytton (Smith 1899a, p. 152) and from various Columbia River sites (Garth 1952, p. 44; Osborne 1957, p. 89, 90; Collier *et al.* 1942, p. 89). Wapiti canine necklaces seem to be limited to assemblages from Canadian sites. Necklaces are reported from Kamloops (Smith 1900, p. 426) and from site EeRh:1 at Cache Creek (Borden 1956).

METAL INDUSTRY

Copper is the only metal at Chase. Numerous copper artifacts apparently decomposed to cupric salts, staining all objects with which the salts came into contact. Judging from the locations of the green stains, bracelets, anklets, amulets, and neck pieces were made of copper.

Copper Ornaments (4)—Four solid pieces of copper were obtained from a collector (Plate XII). The largest piece (Plate XII, d) is a rectangular pendant pierced once at the wider end. Some hair, preserved by the chemical breakdown of the metal, adheres to a second pendant (Plate XII, c). This ornament is square with a large, centrally located hole and a smaller perforation near one edge. A sharp crease in a piece of copper foil (Plate XII, b) suggests that this specimen may have originally been a tubular bead, which was opened by the collector. The smallest copper object (Plate XII, a) is a pendant, perforated three times along one edge. The wrinkled appearance suggests that it, too, may once have been a tubular bead.

The evenness to which the larger copper pendants were gauged almost certainly indicates trade copper (Table 17). It is possible, however, that the many copper stains observed around burials were produced by ornaments made of native copper, which in recent times was mined extensively at Copper Creek, on the western end of Kamloops Lake (Dawson 1877, p. 116).

Copper ornaments, often associated with glass and iron, occur frequently

in recent Plateau sites. Osborne (1957, p. 96, 97), Kroll (1957, p. 227), and McLeod (1957, p. 232) have the most complete discussions of non-aboriginal metals in the Plateau.

TABLE 17—*Dimensions of copper ornaments*

Artifact No.	Description	Length (cm)	Width (cm)	Average Thickness (cm)
EeQw:1-80....	Pendant	11.2	4.2	0.084
EeQw:1-79....	Pendant	4.5	3.7	0.051
EeQw:1-77....	Bead (?)	5.5	2.9	0.028
EeQw:1-78....	Bead (?)	3.8	2.3	0.025

Discussion and Interpretation

The previous descriptive sections are preliminary to a more general discussion and interpretation of the burials and related materials. As the inhumations at Chase probably date from the later years of the prehistoric era, numerous similarities between the Chase assemblage and the ethnographic culture might be expected. There are, in fact, many parallels. By referring to historically documented Shuswap culture, it is possible to round out the otherwise rather meagre archaeological framework. This chapter proceeds from a discussion of the burial pattern to a résumé of Shuswap ethnography, and then to an integration of the prehistoric and historic.

THE BURIAL COMPLEX

Burials were placed in the sand deposits on both sides of the road. The exact number of interments could not be determined, but fifty would be a very conservative estimate. In the course of excavations five complete skeletons were recovered as well as assorted remains of fourteen other individuals.

The five excavated skeletons were flexed primary pit burials. Two bodies lay on their backs and the other three on their sides. Three individuals were flexed to the left, two to the right. The degree of flexure varied between loose and very tight, the child burials being the most tightly flexed. Though no traces of hide or fabric cord were found, the very tightly flexed positions suggest the body was bound. Only one bark-covered or wrapped burial was unearthed, although scattered long bones from disturbed graves had pieces of bark adhering to them. Burial depth was between twelve and twenty inches. Three of the five burials were oriented east/west with the crania of two to the east. Two burials lay with the crania to the north and the legs to the south. Two skeletons faced south, two west, and one north. The long axis of the site is oriented approximately east/west, and the South Thompson River flows downstream to the west past the site. Therefore, the three burials oriented east/west lay parallel to the long axis of the ridge and the flow of the river. Only one cranium pointed downstream.

Grave additions accompanied every burial but one. With two burials the inclusions lay beside the corpse; with another interment the artifacts

rested above and below the cranium. The additions with Burial 3 were found in two locations—a jade celt beside the knees, and the remaining artifacts in a compact group at the feet. Some of the inclusions appear to have been 'killed' or deliberately broken, although this was by no means a common practice. During excavation some chipped knives, scrapers, and three digging stick handles were uncovered. These artifacts were not associated with any specific burial and may have been suspended on poles above a grave; when the poles decayed and toppled over, the artifacts scattered (*see* page 129).

Small, isolated pieces of charcoal were frequently encountered in excavations, but when the distribution of these pieces was charted no pattern became apparent. Possibly they represent the residue from fires made in the winter to thaw the sand prior to burial.

Age of Burials

As the geologic deposits of the site evidently were laid down during the last glacial period and shortly thereafter, the geological history has little bearing on the dating of the interments. No charcoal suitable for radiocarbon dating was recovered. Ethnographic accounts do not mention the site, and the oldest Indian residents apparently knew nothing of its existence until the road was put through the site. Nevertheless, the burials are probably fairly recent. The presence of non-aboriginal copper and the absence of iron and glass beads may provide a means of dating the most recent interments. According to ethnographic evidence, iron was introduced to the Shuswap groups around the middle of the eighteenth century (Teit 1909, p. 475). In 1808, Simon Fraser observed great quantities of glass beads, sheet iron, European clothing, and copper in the Canadian Plateau (Lamb 1960, p. 85-7). Osborne (1957, p. 92-6) feels that glass and metal items were well known in the Plateau by the middle of the eighteenth century. The paucity of trade copper at Chase hints that at least a few of the burials date to 1750, and the earliest remains may be a century or two older. In addition to this historical evidence, the presence of the small side-notched points in Plateau sites appears to indicate a late date (*see* discussion of Kamloops phase).

SHUSWAP ETHNOGRAPHY

At the time of White contact early in the nineteenth century, southern British Columbia was inhabited by various groups speaking Interior Salish languages. One of the languages, Shuswap, was spoken by a population who recognized seven subdivisions of themselves, based on territorial claims and dialectic differences (Teit 1909, p. 453). James Teit's monograph (1909) is the only comprehensive ethnography of these people. Since Teit published a complete work on the neighbouring Thompson Indians (1900) prior to the Shuswap report, he frequently refers the reader to the earlier publication for details. The less comprehensive reports by Boas (1890) and Dawson (1891) are not so useful, but they are nevertheless corroborative since many of their observations were later recorded in greater detail by Teit. Isolated remarks concerning the Shuswap are contained in the journals of the explorers

Mackenzie (1801) and Fraser (Lamb, 1960). Finally, Ray's 1939 and 1942 interpretations of Plateau culture are most valuable for reconstructing social organization and for tracing culture element distributions.

The environment and climate of the Chase area have been mentioned earlier. Briefly, the region abounded with large game, fish, roots, and berries. As no archaeological survey of the Chase to Kamloops stretch of the South Thompson River has yet been made, it is impossible to determine the prehistoric population density. In considering population density for the Canadian Plateau groups it is necessary to recognize the seasonal nature of the dwelling sites. During the winter months the Plateau Salish retired to semi-subterranean houses grouped into clusters forming villages. In the spring and throughout the summer, the permanent housepit was abandoned for temporary bark-covered frame huts (Boas 1890, p. 83; Teit 1909, p. 492-3). The winter village groups broke up into family and extended family units for fishing, root digging, and hunting. In some areas of the Canadian Plateau, this pattern of seasonal transhumance required considerable dispersal from the winter village site, but on the South Thompson this may not have been the case. Although documentation is lacking, possibly the inhabitants were able to erect their summer shelters very close to the winter sites. The salmon runs passed by the front door, and the hunting grounds were readily accessible.

Mammals were taken with a number of different hunting and trapping techniques including the bow and arrow, deadfall traps, snares, and fences used to guide deer into ambushes (Teit 1909, p. 521). Aquatic mammals, such as beaver, were captured with large, composite, unilaterally barbed harpoons (Teit 1909, p. 523, Figure 24).

Annual salmon runs, including the famous Adams Lake run, which still ascends the South Thompson River, provided an important staple. Dip-nets, so efficient in the turbulent murky waters of the Fraser River, are less effective in the slow, clear South Thompson. Here spearing techniques, both by day and by night, would undoubtedly prove more efficient. Anadromous fish ascending small streams were procured by traps and weirs; in larger lakes fish were caught by hooks and long nets. The nets were weighted with naturally rounded pebbles encased in vegetable fibre pouches. Notched sinkers were not used. All the advantages of this bountiful region were greatly enhanced by the technique of fish preservation by drying. Since fish dried in this manner readily kept for a year the Indians were assured of an ample food supply during the winter months. The protein diet was supplemented by vegetable foods such as roots, berries, and edible inner bark of certain trees. All these foods were preserved by baking and drying and were stored in shallow bark-lined pits (Teit 1909, p. 495).

Woodworking assumed some importance in the aboriginal culture, but the straight-grained, easily-split cedar was not plentiful. Tools such as antler wedges, jade adzes, mauls, and graving tools were employed to dress timbers for house construction, to form dugout canoes (mostly sturgeon-nosed), and to manufacture shafts for arrows, spears, leisters, and other items. Basketry, traditionally women's work, assumed considerable importance in the Shuswap culture. Pottery was not made.

Males and females alike commonly wore buckskin clothing consisting of a shirt, leggings, and moccasins. During the colder weather furs were also worn. Adornment of both the person and clothing was common. The clothing was decorated with *Dentalium* shells, wapiti teeth, glass beads, and feathers. The body was frequently painted and occasionally tattooed. Pendants of copper; wapiti and deer teeth; beads of shell, seeds, and bone; and animal claws were suspended from the ears, nose, neck, and hair (Teit 1909, p. 508-511; 1930, p. 397-439).

The Shuswap were active traders. Trade with the Lillooet and Thompson Indians took place during the summer months when the groups met just north of the town of Lillooet for the salmon season. In the very important *Dentalium* trade, the Canyon division of the Shuswap served as middlemen between other Salish-speaking groups and their Athapaskan neighbours who procured these shells from coastal groups (Teit 1906, p. 231, 232; 1909, p. 535). Trade to the south and east, via the Shuswap lakes and Okanagan River, brought the Shuswap in contact with the Okanagan (Teit 1909, p. 536; 1930, p. 250, 252). In 1808, the explorer Fraser noted that some of the Shuswap ventured beyond the Rocky Mountains to hunt bison (Lamb 1960, p. 71).

To the Shuswap, the birth of a child was a mysterious yet joyful event. Bears, especially grizzlies, were somehow concerned with conception. Puberty rites included the seeking of an individual's Guardian Spirit, in addition to activities and tasks dedicated to preparing the individual for assuming adult status. The Guardian Spirit acquired at this time remained with the individual until death (Teit 1909).

At death the body was dressed, tightly flexed, tied, and wrapped in skin or mats. Cemeteries, often lineage owned, were usually located in sandy soil close to the winter village. The grave was circular to oval and shallow and was often lined with grass and bark. Two different burial positions were common: the body might be interred sitting and facing east, or it could be reposed on the left side and facing south, in which case the burial would be oriented east/west with the cranium to the east. Burial furniture included tools and various personal artifacts; other possessions were suspended above the burials on poles. The latter articles were 'killed.' Non-dressed pole structures up to twenty feet in diameter, arranged in cones and covering a grave, were reported by Boas (1890, p. 91) and Fraser (Lamb 1960, p. 72). The Shuswap did not utilize canoes as grave shelters (Teit 1909, p. 593). After a period of several years the relatives of the deceased would sometimes open a grave and re-wrap the remains in a new blanket (Teit 1900, p. 330). Cremation was resorted to only when a band was away from home or when a man died on the warpath; it served only to facilitate the transport of the bones to the family cemetery (Teit 1900, p. 330).

In a discussion of Plateau ethnography, Ray (1939, p. 145) concludes: "the Shuswap have retained Plateau culture in almost full measure," as opposed to the neighbouring Lillooet who had been more strongly influenced by Coastal groups. By 'Plateau culture' is meant a series of traits which include a strong emphasis upon pacifism, egalitarianism, the Guardian Spirit concept, and numerous material culture elements. Regional differences occur,

however, and the Shuswap are thus distinguished from other Plateau groups. Two entirely different forms of social organization are immediately evident from Teit's (1909) description of the Shuswap. A Carrier-influenced system, introduced to the westernmost Shuswap divisions (Canyon and Fraser River) in the mid-nineteenth century, stressed clan affiliation and social ranking. The following remarks do not pertain to these divisions and are applicable only to the remainder of the Shuswap, especially those in the Kamloops region.

Perhaps the outstanding feature of Shuswap society is the egalitarian aspect, for with few exceptions all statuses were open to all members. Specialist statuses included a minor category of slave and the shaman. In neither instance, however, was the status hereditary; children of slaves were granted full membership in the society, and shamans underwent intensive and rigorous training. Chieftainship was sometimes inherited, although Shuswap polity called for the appointment of temporary leaders to guide all economic or social activities. Ranking based on wealth in the Northwest Coast fashion was not present; however, greater prestige was accorded wealthy individuals, probably because of their superior economic prowess.

According to Ray (1939, p. 8-11), local village autonomy was the rule in the Canadian Plateau, although several villages, linked by intermarriage and common hunting grounds, often expressed a feeling of unity (Teit 1909, p. 569). This union was rarely manifest in a military alliance, but it does seem to have assumed some of the functions of a corporate group, especially with regard to hunting and berrying grounds. Fishing stations were probably more intimately associated with specific villages, whereas deer fences and eagle nests were lineage-owned. Sexual division of labour followed normal patterns in that women were associated with root digging, berry picking, and household activities. Males hunted, fished, and engaged in various manufactures. Residence following marriage was bi-local with no particular preference, while inheritance was patrilineal. Individuals probably felt few binding ties with a specific village, and they freely changed residence.

Analysis of Chase Assemblage. The archaeological assemblage from the Chase site agrees quite closely with the ethnographic picture given above. Many implements associated with hunting and fishing, together with the animals taken, are represented. Remains of wapiti, deer, bear, beaver, marmot, fish, and waterfowl are positively identified. Hunting paraphernalia include arrow- and spear-heads (both in stone and organic materials), leisters, and harpoons. The Group B harpoon heads (page 111) may parallel the composite variety listed only for the Shuswap among the Canadian Plateau groups (Teit 1909, p. 523). Numerous antler digging stick handles attest the importance of root digging; the sap scraper indicates the probable occurrence of yet another ethnographically recorded economic technique. Weapons of war and of the chase are often similar; the arrows and spears, the antler and whale bone clubs, as well as the long antler and bone points, may perhaps be regarded as such dual purpose implements. In addition to the artifacts directly associated with the subsistence quest, there are numerous fabricating tools. Woodworking is evidenced by the jade celts, mauls, wedges, chisels.

drills, stone and tooth graving tools, and shaft smoothers. The sole surviving artifacts in wood consist of the wooden mask, the birchbark basket, and the cylindrical container. Basketry and matting are represented by the fragments of birchbark, the piece of matting covering the wooden mask, and the numerous mat creasers. Some of the bone awls may also be associated with basketry and matting. There is no concrete evidence of clothing, but the presence of scrapers, awls, and needles probably indicates garment manufacture. Ornamentation of both the body and clothing is explicit in the assemblage with examples of shell beads, pendants of copper and shell (but neither teeth nor claws), red ochre, and suggestion of tattooing. There are numerous indications of trade relationships with the neighbouring Plateau groups. The jade and steatite probably came from the territory inhabited by the Thompson, that is, the Lytton region where jade boulders and substantial deposits of steatite occur. The presence of strictly maritime items, such as *Dentalium*, *Haliotis*, *Pecten caurinus*, and whale bone, indicates trade to the west. The trade copper from Chase probably found its way via overland routes from the fur-trade settlements located east of the Rocky Mountains.

It is indeed fortunate that at Chase there was found one of the largest collections of aboriginal art work ever excavated from a single Plateau site, where archaeological assemblages often contain only the stark stone (and sometimes a few bone and antler) implements associated with the subsistence quest. The Chase collection demonstrates the extremely limited range of material culture that has been recovered in the past from Plateau sites. Some of the objects, which do not appear to have functioned primarily in the subsistence quest, may provide some insight into non-material aspects of culture.

It is convenient to divide the art forms from Chase into two categories: representational and geometric. Representational carving can be subdivided into three classes: (1) in the round, (2) in bas-relief, and (3) by incision. Carvings in the round may comprise the complete artifact, or they may decorate only part of an implement. Examples of the former are the zoomorphic bird bowl (Plate V), the human figure bowl (Plate VII), the stone serpent, and the wooden mask (Figure 10). Carvings that decorate portions of artifacts are found on the zoomorphic mauls, the zoomorphic digging stick handle (Plate VIII A, c), and the antler tine clubs (Plate IX). There are several examples of representational bas-relief sculpture: the eye on an antler tine club, the anthropomorphic antler heads (Figure 8), and the whale bone club (Figure 9, a). The eye and mouth engraved on the sap scraper (Plate X A, a) are the only examples of incised representations.

The "principle of decorative art," according to Boas in a discussion of Thompson art (1900, p. 377), is the "conception of animals adapting themselves to the use of men, and assuming the form of implements." The artifacts conforming with this 'principle' at Chase are the zoomorphic hand mauls, the steatite bird bowl, the sap scraper, the antler and whale bone clubs, and one digging stick handle. The representational art forms that do not conform to the "principle of decorative art" are the steatite bears (Plate VI), the steatite serpent, and the steatite human faces (Figure 6).

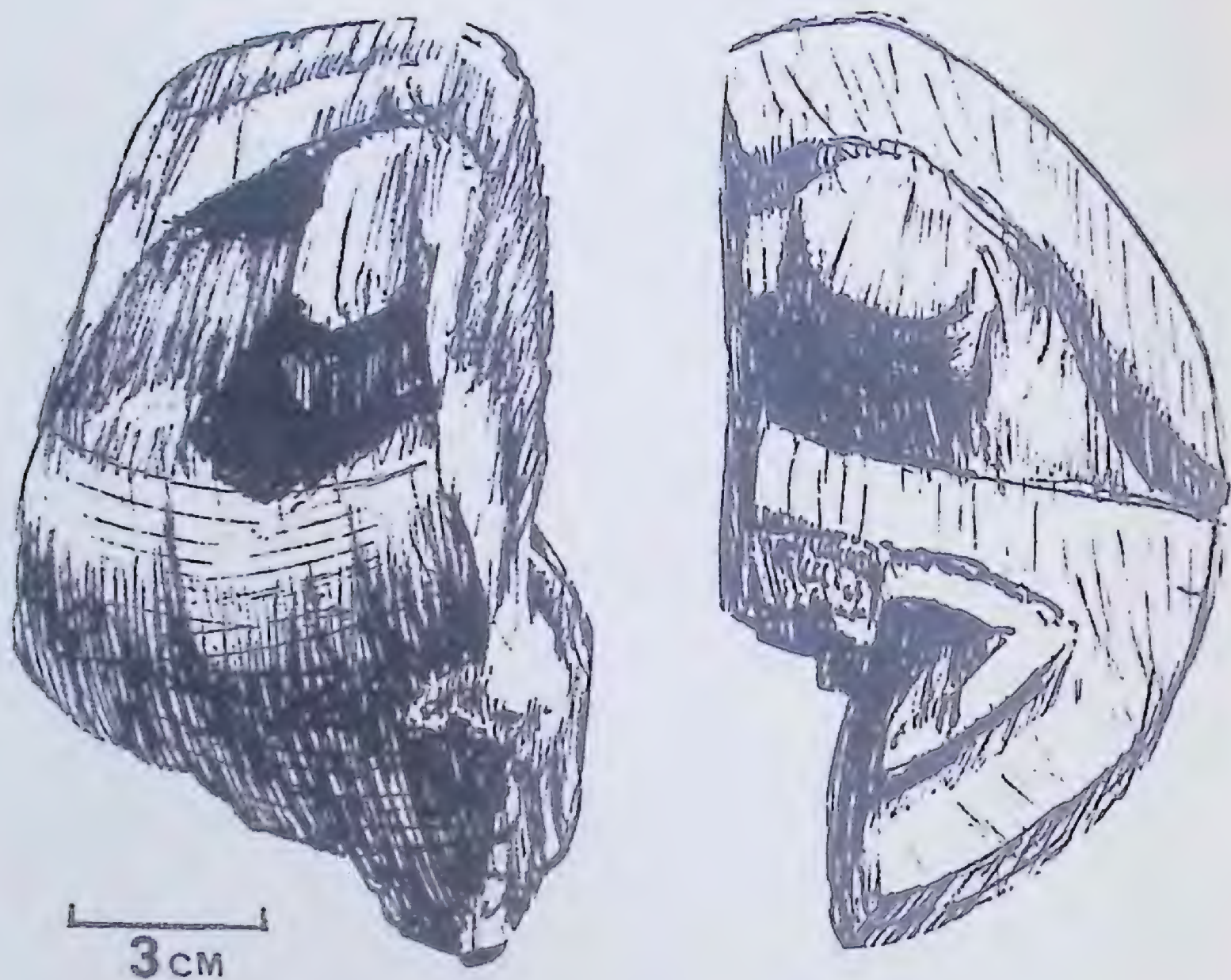


FIGURE 10—*Wooden Mask*
(Specimen is from a private collection)

Eight geometric motifs can be discerned: (1) long parallel lines (Figure 11, A), (2) circle and dot (Figure 11, B), (3) vertebrae (Figure 11, C), (4) groups of short parallel lines (Figure 11, D), (5) ticked lines (Figure 11, E), (6) crosses and X's (Figure 11, F), (7) zigzag (Figure 11, G), and (8) cross-hatching (Figure 11, H). All but the vertebrae pattern are incised; the vertebrae motif stands out from the object in bas-relief and is seen on the bone bows (Plate X B, a), the antler tine clubs, and the gorget.

According to Boas (1900, p. 377), the various geometric designs are highly conventionalized symbols. Similar statements are made by Smith (1899a, p. 156). The geometric motifs from Chase that can be interpreted in this manner are the ticked lines (trench with earth thrown to one side), the long parallel lines (trenches), crosses and X's (meeting of trails), the circle and dot (eye), and groups of short parallel lines (wood worm). The orientation of some geometric motifs with the long axis of the artifact is constant. In every example, ticked lines, long parallel lines, and short parallel lines are incised at right angles to the long axis.

TABLE 18—*Artifacts with incised geometric motifs*

Artifact Type	No. in Sample	Material	Motif	Comments
Digging stick handles . . .	15	Antler	Ticked lines; long parallel lines; crossed lines; cross-hatching.	Ticked lines and long parallel lines most common (Plate VIII)
Harpoon heads	10	Antler	Short parallel lines	(Figure 7)
Clubs	3	Antler	Circle and dot; short parallel lines; crossed lines; zigzag; vertebrae.	Also carved zoomorphically (Figure 7, a) (Plate VIII)
Sap scraper	1	Antler	Short parallel lines; long parallel lines; cross-hatching.	Also zoomorphic head (Plate X A, a)
Gorget	1	Antler	Vertebrae.	
Unknown (EeQw:1-103)	1	Antler	Short parallel lines.	(Plate X A, f)
Tine flakers (?)	2	Antler	Short parallel lines.	
Bear penis pendant	2	Bone	Double zigzag; short parallel lines.	(Figure 9, b)
Miniature bows (?)	3	Bone (?)	Short parallel lines; vertebrae.	(Plate X B)

The stone sculpture of the Chase site is obviously part of the steatite carving complex described by Duff (1956). The uptilt of the head, the disproportionately large eye, the treatment of the nose, and the shape of the mouth are diagnostic features occurring on many of the specimens from southern British Columbia and northern Washington State. The bowls and human head carvings can be duplicated from other sites (Duff 1956, p. 66), but individual sculptures of animals are not reported. Three distinct yet highly conventionalized eye styles can be recognized: (1) an almond-shaped eye with a bulging round pupil, (2) a longer narrower form, with a correspondingly more lenticular pupil, and (3) another elongate form in which the lower lid is flat while the upper lid rises steeply and then slopes gradually to

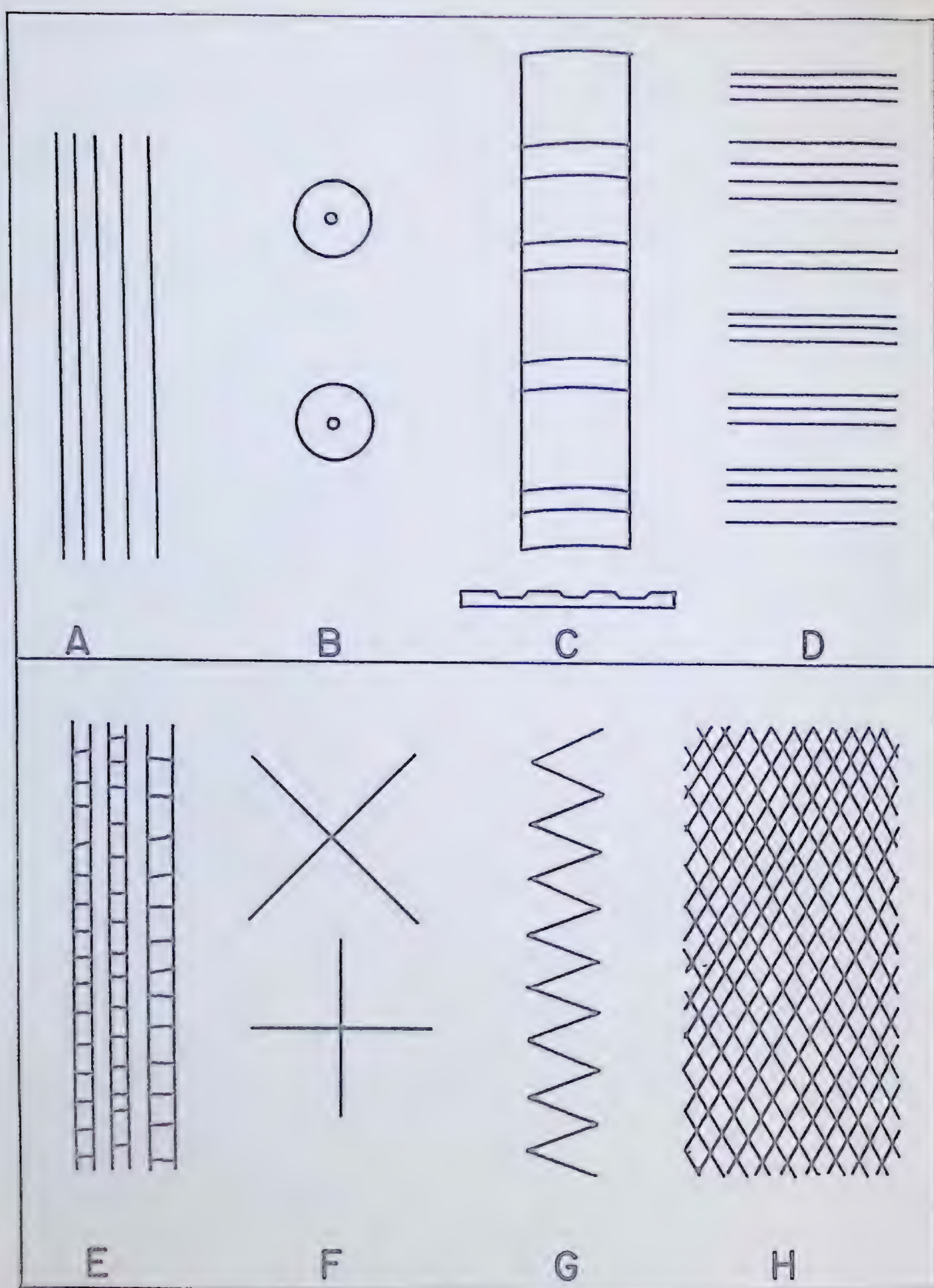


FIGURE 11—*Geometric Decoration Motifs*

meet the lower portion. The first style is seen on the larger bear and the small anthropomorphic heads; the elongate eye is on the smaller bear; and the third form is seen on the human figure bowl. Although the almond-shaped eye has persisted into modern Northwest Coast wood carving, there is no evidence to suggest that any one of the three styles is the older. Finally, the sample from Chase is too limited to permit one to discern whether the nature of the object portrayed influenced the choice of eye style.

The antler sculpture is quite different from the stone carving, as it tends to be less stylized and to be more realistic in the portrayal of body proportions. The eye, so highly conventionalized in the stone sculptures, is extremely simple in the antler representations. On the zoomorphic heads of the antler clubs and the digging stick handle, the eyes are either incised circles, circles with centre dots, or two recurving lines like the eye on the sap scraper. The eyes of the human heads are more complex. On the handle with two heads, the eyes are ovoid with a line incised laterally along the major axis of the ellipse. The single antler head has more rectangular eyes and is less realistic. The mouths of the zoomorphic antler carvings are fairly similar to the open-mouthed steatite figures, and the human figures in antler have thin, tightly closed lips. A feature common to anthropomorphic representations in stone and antler is the high nasal root and the widely flaring alae.

Evidence for the decoration of bone and wood is scanty. The usually rapid decay of wood no doubt is responsible for the scarcity of wooden objects, but the amount of undecorated bone is surprising. Less than one-tenth of the bone items are embellished, whereas over three-quarters of the antler pieces are decorated. It may be that bone is harder to incise than antler. The few engraved bone pieces (excluding the whale bone clubs) are seemingly non-utilitarian artifacts such as bone pendants and the miniature bows.

It appears likely that some of the incentive for the production of the art forms at Chase can be attributed to religious activity. As mentioned earlier, the religious systems in the Plateau revolved around the Guardian Spirit concept and the Spirit quest by both boys and girls at puberty. The notions and ritual associated with the quest are described at length by Ray (1939) and need not be reiterated here; the concern here is with aspects that might be manifest in the archaeological record. Ethnographic evidence (Boas 1900, p. 381) indicates that a representation of the Guardian Spirit adopted was sometimes transferred to artifacts by incising or painting. At times, a small token of the Spirit was carried on the person. Possibly the bird beaks and bones associated with Burials 3 and 4, the steatite objects such as the bears and serpent, and perhaps also the small mammal foot bones included with Burial 2 are tokens of the individual's Guardian Spirit. The zoomorphic heads carved on the digging stick handle and the antler tine clubs may also be connected with the Guardian Spirit concept.

Far outnumbering the zoomorphic carvings are the various artifacts bearing incised geometric motifs. In all, 38 implements are so incised. Table 18 suggests there may be a relationship between certain motifs and specific artifacts. Most obvious are the connection between ticked lines and long parallel lines and digging stick handles and the negative correlation between short parallel lines and digging stick handles. As mentioned above, the

earliest Canadian Plateau ethnographers (Boas, Smith, and Teit) acquired from the Indians interpretations for various geometric designs. It would be unwise, of course, to accept without qualification the symbolic interpretations given by the native informants, as there is always the possibility that the geometric motifs are purely decorative. On the other hand, by failing to follow the leads provided by ethnographers, the archaeologist may be unnecessarily restricting his interpretations.

The long parallel line motif is described as representing trenches, and the short lines incised perpendicularly to the long lines are said to indicate earth thrown to one side of the trench. In a discussion of female puberty rites, Teit (1900, p. 312, 313) reports that the digging of trenches with the throwing of earth to one side was an important ritual activity and supposedly assured that the initiate would become adept in digging for roots, possibly the female's most important economic activity. A relationship between the symbolic trenches on digging stick handles and the known puberty rite of digging trenches seems likely. A second commonly occurring geometric motif may be submitted to a similar analysis. Groups of short parallel lines are seen on artifacts normally associated with male activities. They include harpoon heads, antler tine clubs, tine flakers, and miniature bows. Boas (1900, p. 378, 379) notes that such groups of short parallel lines are symbolic representations of wood worms painted on bow handles by youths during puberty rites. The significance of the wood worms is not clear, but the association with males is evident, and the presence of short parallel lines on the three miniature bows is suggestive.

There may be yet a third link between the supernatural and the art motif. Bears were considered especially powerful Guardian Spirits, and among the Shuswap they were thought to play a part in human reproduction (Teit 1909). One wonders at the connection between the two carefully incised bear penis bones and the cosmological notions regarding the bear spirit. Each penis bone is incised with short parallel lines and the zigzag motif interpreted as mountains and valleys, or snake tracks. As both mountains and snakes are 'powerful' in Canadian Plateau cosmology, the juxtaposition of these three or four (bear, wood worm, mountains, and/or snakes) symbols is interesting. If the interpretation of these pierced penis bones functioning as pendants is correct, one might expect them to be worn by males of greater than average power and prestige in the community. There is, unfortunately, no way of checking the two penis bones against known burials to ascertain the associated sex. Both artifacts were discovered by relic collectors.

The presence of possible Guardian Spirit representations with Burials 1, 2, and 4 brings up an interesting problem. For if one is to interpret the bird beaks, the small mammal foot bones, and the carved antler digging stick handle as functioning in this religious context, one has to explain the presence of these objects with pre-puberty children, presumably much too young to have participated in a vision quest. The obtainment of a Guardian Spirit by inheritance might be possible, as the Shuswap are reputed to have practised a form of spirit inheritance in which a father could assist an offspring by presenting him "with a symbol which will aid in obtaining a specific spirit" (Ray 1939, p. 88).

The unexpected presence of *Pecten caurinus* rattles, the wooden mask resembling the Coast Salish Sxwaixwe mask, and the steatite figure bowls may provide other insights into the prehistoric culture. Since it is impossible to state unequivocally that there is a functional relationship between these artifacts, caution is necessary. Sxwaixwe masks and *Pecten* shell rattles are intimately associated among the Coast Salish and with a dance often performed at occasions requiring ritual purification (Barnett 1955, p. 158). The Sxwaixwe did not function in the elaborate winter ceremonials and Secret Society festivals such as those of the northern Northwest Coast. It was primarily a social mask, with prestige being bestowed upon the individual hiring the dancers (Duff 1952, p. 126). As one explanation for the function of the human seated figure bowls, Duff (1955, 1956) offers the use by shamans for purifying water to sprinkle over individuals following puberty rites. Purification after these rites was common in the Plateau (Ray 1939), and although it may be fortuitous, the juxtaposition of these artifacts (mask, rattles, and steatite bowls) is suggestive. Unfortunately, no mention is made in the Plateau ethnographic literature of the presence of masks or rattles in shell. If there is any justification in linking these items functionally, it would suggest that in pre-ethnographic times the inhabitants of the Chase area were practising a form of purification ceremony, an indication of the strongest kind of contact with Coastal groups. The well-developed ranking and prestige system accompanying this sort of ceremony on the Coast seems out of place in the basically egalitarian Canadian Plateau. Assuming such activities to have taken place at Chase, it would be interesting to know something of the status of the individuals with whom the objects in question were buried. On the other hand, the fact that the objects were buried and thus effectively removed from the society may be a reflection of the basic Plateau notion of egalitarianism. Why Boas, Dawson, and Teit failed to notice masks, rattles, and steatite seated human figure bowls in the early historic period is a mystery. The last two items, at least, have a sizeable spatial distribution in the Canadian Plateau and were present in some sites that only just antedate the ethnographic period. It may be that the socio-religious aspects of the culture were among the first to change and that by the latter half of the 19th century they were lost even from the memory culture of the oldest informants. Alternatively, the Indians may have deliberately withheld such information, although Teit resided with the Thompson River Indians for many years.

The Chase burial complex parallels the ethnographic pattern in that flexed primary burials in pits seem to have prevailed. In addition, the practice of placing artifacts with the deceased is evident. The Chase burials, though admittedly a small sample, do not reflect the patterned directional orientation mentioned in the ethnographic literature. It seems likely that the differences noted in the number and kind of inclusions may indicate something of the status of the deceased. The impoverished Burial 2 is in sharp contrast with the rich Burial 3. Had we had this sort of data from the remainder of the burials at Chase, it might have been possible to make some observations on the sexual division of labour and perhaps some additional statements on the association of geometric and representational carving with specific sexes.

PART II

DISCUSSION

The Archaeology of the Kamloops-Chase Area

The report on the late nineteenth century investigations of Harlan I. Smith in southern British Columbia includes a description of burial excavations at Kamloops (Smith 1900). Although Smith's publication is inadequate for a detailed comparison with the Chase materials, one can gather a considerable amount of useful data by referring to Smith's Appendix I. Too often the emphasis does not reflect present interests, and the non-spectacular pieces, such as chipped points, he does not describe. Enough pieces are described or sketched, however, so that some comparisons can be made. Less than forty miles separate Kamloops from Chase, and the meandering South Thompson River, practically free of rapids and easily navigable, connects the two towns. Ethnographically, since both areas were inhabited by Shuswap, there is good reason to suspect that recent sites of comparable antiquity should exhibit a considerable degree of cultural similarity.

Smith reports on four burial sites in the vicinity of Kamloops: (1) the Fort site, located near the original Hudson's Bay fort location and consisting of extended burials in wood coffins; (2) the Hill site, located on Government Hill, where Smith unearthed two burials surrounded by cedar slab cists; (3) the Government site where four deposits of cremated skeletal remains were found; and (4) the Large site, where Smith uncovered thirteen flexed burials. These sites can be placed in chronological order on the basis of the associated artifacts. The Fort site dates from the historic period and is the most recent of the Kamloops burials. Smith found an iron awl and some copper beads with the two interments at the Hill site, but the other artifacts were of aboriginal manufacture, and the burials antedate the Fort site. No items of European origin were definitely associated with the Large site, although some copper pendants may be of trade copper. The antiquity of the cremated remains of the Government site is uncertain. Smith reports large flat bone beads with the cremations; he also notes the presence of similar beads above the burials at the Large site. It is not clear if this represents a valid stratigraphic situation which would enable us to postulate a date for the Government site more recent than that of the Large site. At this time, the above evidence is less persuasive than the absence of trade items in the Government site, which suggests, at least tentatively, that the cremated remains represent the earliest burials known from the Kamloops area.

To determine whether any of the assemblages from the Kamloops area have close affinities with the Chase site, Table 19 was prepared from Appendix I in Smith (1900) and the artifacts described earlier in this report. The table indicates the close relationship between the Chase and the Large burial sites. Not only is the method of burial identical, but also similarities are seen in the large, perforated *Pecten caurinus* shell rattles (?), the decorated

TABLE 19—Selected artifact comparisons from Kamloops and Chase

No.	Artifact Type	Hill Site	Government Site	Large Site	Chase Site
1	Steatite pipes.....			X	X
2	Long copper beads.....	X			?
3	Copper pendants.....			X	X
4	Copper stains.....		X	X	X
5	Animal claw pendants.....		X	X	
6	Wapiti tooth necklaces.....	X			
7	Bear penis bone pendants.....			X	X
8	<i>Pecten caurinus</i> pendants.....			?	X
9	<i>Haliotis</i> pendants.....				X
10	<i>Dentalium</i>	X	X	X	X
11	Flat bone beads.....		X		
12	Pierced whole <i>Pecten caurinus</i> shells (possibly rattles).....			X	X
13	Beaver tooth dice.....	X			
14	Whale bone.....			X	X
15	Stone sculpture.....				X
16	Iron.....	X			
17	Beaver tooth knives.....	X	X	X	X
18	Antler harpoon heads.....			X	X
19	Bone harpoon heads.....		X		

and pierced bear penis bone pendants, the elongated copper pendants, and the whale bone objects. Strikingly similar are the trumpet-shaped steatite pipes with the encircling bands at the junction of the bowl and stem (Smith 1900, p. 429). Common negative traits include the absence of wapiti teeth, beaver tooth dice, and flat bone beads. *Dentalium* shells are listed for both sites; those from the Large site are decorated, but the specimens from Chase are not. *Haliotis* shell occurs only at Chase. Animal claw pendants are present only at the Large site. The absence of stone sculpture at the Large site may reflect the smaller sample of thirteen burials.

Associated with the cremated remains at the Government site are wapiti teeth, many claw pendants, and flat bone beads. Absent are copper pendants, *Pecten* shells, bear penis bones, beaver tooth dice, and *Haliotis* shells.

The Hill site is distinguished by the presence of burials surrounded by cedar cists and by one burial with a canoe arranged tent-like over the grave. The assemblage is also distinctive, as the iron awl, beaver tooth dice, a wapiti tooth necklace, and copper beads are not reported from the other sites. The Hill site assemblage does not contain *Pecten* shells, steatite pipes, or flat bone beads; but again, the small sample weakens the negative aspects of the evidence.

In establishing a tentative cultural sequence and in determining the relationship between the sites, three main frames of reference are utilized: (1) the relative age of the assemblage as suggested by the type and quantity of trade goods; (2) the method of burial; and (3) the artifacts listed in Table 19. Closest affinities are seen between the Large site and the Chase site, and the two sites are probably contemporaneous. Evidently more recent are the cist burials from the Hill site. The age of the cremated remains is still a mystery, but an age of pre-A.D. 1000 is suspected.

CANADIAN PLATEAU BURIAL SITES

Burials have been unearthed from many localities in the Canadian Plateau, but few have been excavated in a systematic fashion. The investigations by Smith in the Lytton, Kamloops, and Nicola regions have been published (1899*a*, 1900), as has some second-hand information on amateur excavations in the Okanagan and Similkameen valleys (Caldwell 1954). Considerably more data are available from the American Plateau, and a few of the more prominent sites will also be reviewed here. (For locations of the sites see Figures 1 and 2.)

EeRh:1, near Cache Creek. Several burials were excavated by Borden (1956) near the town of Cache Creek in 1954 and 1956. This site, designated EeRh:1, consisted of several boulder cairns on a hill one mile north of the town. Three of the boulder cairns were investigated, and beneath them in the well-compacted ground four inhumations were found.

Beneath the first cairn a flexed burial was discovered surrounded by a cedar (?) stake cist, which extended from near the surface to a depth of thirty inches. The tops of the stakes were not charred. A fragmented rush matting covered the burial, which was lying loosely flexed on the left side with the cranium pointing to the northwest. Among the grave additions were one chipped knife and five small, side-notched, triangular points.

A second interment was beneath Cairn VI. This burial was surrounded by an aspen stake cist, which extended nearly to the surface. A piece of poplar bark was placed over the cranium, and the entire body was originally covered with matting. The burial was loosely flexed on the right side with the head to the east. A large, non-stemmed chipped knife was in the lap.

Two burials were encountered beneath Cairn VIII. The first interment was surrounded by a charred cedar (?) slab cist, which extended almost to the surface. The cranium was pointing towards the west. The body was that of a young female lying on its back with legs flexed to the right. Numerous grave additions were placed with this burial, including two empty and broken birchbark pouches (?), a decorated wing-bone with a worked mammal bone inserted, a highly polished needle with a proximal eye, and a necklace of seventeen wapiti canine teeth arranged around the neck in three rows. The second burial under Cairn VIII was surrounded by a cedar stake cist. This young infant burial lay flexed on its back with the cranium to the west.

Four other burials were removed by members of the South Cariboo Museum Association. All lay flexed, encased in wood cists, and covered by stone cairns. At least one of this group lay flexed on the left side and was surrounded by a charred cedar slab cist.

All the burials were located at depths of about thirty inches beneath cairns (two apparently shared Cairn VIII) in pits that were lined with stakes. Four of the cists were possibly of cedar and one was of aspen. At least three of the burials were covered with matting or bark. Two bodies were flexed left, the crania pointing west; three were flexed right with the head to the east. No trade goods were included in this site.

Spences Bridge. A cairn-marked grave was excavated by Teit near Spences Bridge, 20 miles south of Cache Creek (Smith 1900, p. 434). The

interment was of an adult male lying face down and loosely flexed in a charred wood stake cist. A copper tube bead (?) was among the inclusions.

Lytton. Late in the nineteenth century, Smith (1899a) unearthed a number of burials at several sites around Lytton. Although Smith did not describe each interment, he cited six examples and drew some general conclusions regarding the method of burial (1899a, p. 159, 160). Flexed burial, both on the left and the right side, was practised, and no cairns or cists were encountered.

Texas Creek (EdRk:1). During the winter of 1961, logging operations destroyed part of the burial site at Texas Creek, located approximately twelve miles south of Lillooet on the west bank of the Fraser River. Information pertaining to the method of burial was lost, but a later examination of the area revealed no trace of cairns or of wooden cists. The burials were placed in a steep, sandy slope. The owner of the land sold the collection of associated artifacts to the Kamloops Museum. A future report will include a description of the artifacts.

Mile 28 Ranch (EdRk:3). In the spring of 1961, a disturbed burial ground was investigated, and two flexed, primary burials were excavated by Borden and Sanger. Possibly a dozen burials were placed about two feet deep into a sandy terrace approximately one hundred feet above the high water mark of the Fraser River. Located 16 miles south of Lillooet, and on the east bank of the Fraser, the Mile 28 Ranch site is directly opposite the Nesikep Creek site (Sanger 1964). This site will be described in more detail in a final report on the archaeology of this section of the Fraser.

EdRl:10. During the summer of 1962 attention was directed to a small burial site located on the west bank of the Fraser, approximately five miles south of Lillooet. This site seems to be unique in the Canadian Plateau, and a similar situation has not been described from the American Plateau. At EdRl:10, apparently, four burials were interred in a single tomb dug into the slope of the main river terrace 600 feet above the Fraser. The slope is heavily overgrown, and the compact gravels into which the burials were deposited do not represent a typical burial site location for this portion of the Fraser River. Unfortunately, three of the burials were removed by the discoverers of the site, but the fourth, the lowest in the tomb, was undisturbed. The compactness of the gravels made it possible to determine the precise limits of the tomb. A number of river cobbles, carried up from the Fraser, were utilized to line the bottom of the grave and were piled around the open side to retain the backfill. After the flexed body was interred, a small dog, killed by a blow to the head, was deposited beside the human burial. A series of artifacts, all suggesting a late prehistoric date, accompanied the burial. An enumeration of these artifacts together with their dimensions is provided in Table 20 (Plate XIII). Among the inclusions was the mandible of a marten (*Martes americana*). No other bones of this animal were present, and it may be that the marten represented the Guardian Spirit of the deceased.

Lillooet. The geologist Dawson reports some burials from Lillooet (1891, p. 12). Above some of the graves he saw quantities of charcoal, but

TABLE 20—Dimensions of artifacts associated with Burial 1, EdR1:10

Plate Ref.	Description	Artifact No.	Dimensions (cm)		
			Length	Width	Thickness
Plate XIII, a	Net gauge (?) – antler	EdR1:10-2	12.0	4.4	0.4
b	Awl – antler	5	15.5	2.5	0.7
c	Wedge – antler	17	13.1	2.1	2.0
d	Awl – bone	16	8.7	0.6	0.6
e	Beaver incisor	1	6.4	0.7	0.5
f	Chipped point – basalt	15	2.9	1.7	0.3
g	Marten mandible	3, 19			
h	Chipped scraper – basalt	11	4.8	4.4	1.0
i	Chipped knife – basalt	10	5.3	3.4	0.7
j	Chipped scraper – basalt	4	3.8	2.7	1.3
k	Chipped scraper – basalt	13	4.1	3.9	0.4
l	Chipped scraper – basalt	9	3.6	2.9	0.7
m	Chipped knife – basalt	14	5.5	2.8	0.8
n	Chipped knife – basalt	12	6.5	2.1	0.6
o	Chipped point – chalcedony	8	4.1	2.7	0.5
p	Chipped scraper – basalt	7	1.8	1.8	0.3
q	Graver – basalt	6	2.5	1.5	0.4
r	Chipped knife – basalt	18	6.5	3.0	1.1

he noted that none of the bones or artifacts had come into contact with fire. Oxidized iron fragments suggest a late date for the site.

Many other burial sites in the Lillooet area are known to have been disturbed, and no reliable data concerning the method of interment are available.

Kelly Creek. In the talus slopes flanking the south bank of Kelly Creek, about thirty miles north of Lillooet, a Pacific Great Eastern Railway cut exposed a number of interments. Other burials were uncovered by highway construction in the talus on the north side of Kelly Lake. No trade goods were reported from these sites.

GaSf:2, Fraser Lake. Borden reports talus slope burials from the west end of Fraser Lake (Daugherty 1955, p. 308).

Adams Lake. Logging operations at Adams Lake disturbed a burial site. Two adult burials and one fragmentary child's burial were examined by L. Hills in 1965 (pers. comm.). The burials, interred in a talus slope covered with Douglas fir, were placed one above the other, apparently at different times. One adult was buried in a loosely flexed position with the knees thrown to the left and the head to the west facing north. Inclusions with the burial were an *Olivella* shell necklace, two armbands of abalone shell, and a woodpecker bill on the sternum. A large stone was positioned over the ribs. The other adult burial, which was only partly excavated, also had a large flat boulder placed over the ribcage.

GbSk:1, Burns Lake. A single non-cremated pit inhumation was discovered at Burns Lake. The grave additions included a jade celt, an antler wedge, an antler spatulate object, and several chipped points and scrapers (Borden, pers. comm.).

Nicola Valley. A number of cemeteries in the Nicola Valley were excavated by Smith (1900, p. 405, 437). The Nicola River empties into the Thompson at Spences Bridge, 23 miles northeast of Lytton. Talus burials were encountered in two sites, 9 and 13 miles from the confluence of the Nicola and Thompson rivers. The bodies were placed in the toe of the slope and covered with rocks. Occasionally, a pole was noted inserted into the pile of rocks to mark the grave. Apparently, no trade items were found among the inclusions.

Nine inhumations were unearthed at Nicola Lake (Smith 1900, p. 438-440). Some of the talus burials were flexed on the left side and others on the back. All were covered with 12 to 24 inches of rock and marked with a pole. Two of the graves included dog skeletons, and two contained copper ornaments, which may have been trade items.

Okanagan and Similkameen valleys. During a survey of the Okanagan and Similkameen valleys, Caldwell (1954) obtained some data from local residents on aboriginal burial practices. Four forms of burial were reported: simple pit, cedar cist, cairn, and talus, the latter in the Similkameen Valley only (Caldwell 1954, p. 16, 17). The presence of copper tubing and ornaments suggested to Caldwell that most of the burials were relatively recent.

AMERICAN PLATEAU BURIALS

Unlike the Canadian Plateau, the American sector has received considerable attention, although, unfortunately, few of the results have been published. Many data are contained in various M.A. and Ph.D. theses; other information is either in note form or irretrievably lost owing to the activities of relic collectors. It is beyond the scope of this study to attempt to assemble all the scattered data. For comparative purposes, however, a review of the larger, better-known sites is desirable.

The Dalles. Few areas in the Pacific Northwest have been excavated so intensively as The Dalles region. Evidence of human occupation dating back possibly to 11,000 years ago has been discovered there (Cressman *et al.* 1960). Strong *et al.* (1930) recorded three forms of burial in fairly recent sites at The Dalles. They found talus slope, simple pit, and group cremation burials (Strong *et al.* 1930, p. 43-8). A series of group cremations was also noted by Butler (1958), and there are suggestions from such Dalles area sites as Over, Lucy, and Congdon that mass cremation may be the oldest form of human burial noted in The Dalles area.

Middle Columbia River. Many burial sites have been reported along the Columbia River between Wenatchee and the John Day River. At Sundale, near the town of Arlington, Garth (1952, p. 44) exposed a historic site containing mass cremations. He also excavated cremations from Sheep Island which were stratigraphically above extended pit burials. Garth's interpretations of this site and the Plateau generally have been strongly criticized by Osborne *et al.* (1961).

Salvage excavations in conjunction with the building of the McNary Dam uncovered a series of thirty-seven flexed burials on Berrian's Island,

several miles downstream from Sheep Island (Osborne 1957). One-third of the inhumations were encased in wood cists in a general east/west orientation.

Crabtree (1957) has described thirty-seven burials from Rabbit Island, near the town of Kennewick. Again, extended burials underlay more recent flexed interments.

From Wahluke, 40 miles north of the mouth of the Snake River, mass pit and individual cist cremations have been reported (Krieger 1928, p. 10). Garth (1952) concludes that the group remains pre-date the individual cist cremations.

Seventy-seven flexed primary burials, a few partially charred, were unearthed at the Potholes site near Trinidad, Washington (Crabtree 1957).

Yakima Valley. The investigations of Smith (1910) in the Yakima Valley revealed three forms of burial: (1) interments in cones of volcanic ash; (2) burials in talus slopes; and (3) mass pit cremations.

Snake River. Canoe burials and wood coffin burials were excavated from Burial Island in the Snake River. From farther upstream, near the town of Asotin, Sprague (1959) reports extended pit, cist, and wood-coffin burials.

Upper Columbia River. One hundred and thirty-four primary pit and sixteen talus slope burials were recorded during a survey of the Columbia River between the Grand Coulee Dam and the International Boundary (Collier *et al.* 1942). This collection of burials represents the largest ever gathered from a single portion of the Plateau.

In summary, most of the recent aboriginal Plateau burial practices can probably be considered variations of four forms: (1) primary pit, both extended and flexed; (2) talus slope; (3) wood cist around a primary pit burial; and (4) cremation. Of the two varieties of pit burial—extended and flexed—the former appears to be the earlier. Little is known of the temporal position of the talus burials, but examples have been found with and without trade goods. Possibly, they represent the equivalence of pit burials when easily excavatable burial plots are not available. Cist burials are probably the most recent of the primary pit burials, with the majority being attributable to the historic period. The prehistoric cist burials at Cache Creek may be among the earliest known burials of this type. The cremations present a real problem in Plateau prehistory. The locus of this trait would seem to be in the Lower Columbia and around The Dalles, although there are isolated instances reported from the Middle Columbia and up to Kamloops. It seems unlikely that there is any direct link between The Dalles cremations and the northern Northwest Coast – Carrier cremation complex, which was spreading south into the Canadian Plateau during the early historic period. Given the evidence for early mass cremations at The Dalles, the burned remains with rock cairns (Smith and Fowke 1901) in northwest Washington and on southern Vancouver Island, and the Bella Coola legends (Drucker 1955, p. 160) stating that at one time they too practised cremation, it would seem that attempts (Strong *et al.* 1930, p. 49, 50; Ray 1939, p. 64, 65; Osborne 1957, p. 156) to derive the complex from the Tsimshian are over-simplifying the

problem. Ray's (1939, p. 65) alternate explanation that the cremation concept is an ancient one in the Plateau may be correct. Without some absolute dates for the cairns, The Dalles mass cremations, and the Government site at Kamloops, it does not seem possible to make any definitive statements, but I would suggest that cremation is an old practice in the Plateau and that failure to distinguish the tradition of mass burnings on the Columbia from the individual cremation burial pattern of the Tsimshian and Carrier may have resulted in some incorrect conclusions regarding the closeness of the relationship.

Ethnographic and Archaeological Sub-areas of the Plateau

In his 1939 monograph on Plateau culture, Ray postulates lateral and longitudinal subdivisions of the Plateau. Ray suggests three lateral sub-areas, based almost entirely on non-material elements of culture: (1) a northern area comprising the Athapaskan groups; (2) a central region, the Canadian Plateau terminating just south of the International Boundary; and (3) the American Plateau. Whereas the Athapaskan-Salishan linguistic boundary is at the same time the cultural sub-area dividing line, the boundary between the Salishan and Sahaptin languages is over one hundred and fifty miles south of the sub-area divide. Intersecting the lateral portions of the Plateau at right angles are three longitudinal divisions. There is an eastern section, comprising the Kutenai and the Nez Percé; a central division, including the Shuswap and the Columbia River groups to the Wishram; and a western sub-area, comprising the Athapaskan, Lillooet, Thompson, and Wishram. According to Ray, the easternmost section displays the influence of the Plains groups, and the western sub-area reflects the inland diffusion of Coastal traits. In the centre of the Plateau, among the Southern Okanagan, Colville, Sanpoil, Lower Spokane, and Columbia, are found the cultures least affected by extra-areal influences and the "most representative of older levels and fundamental aspects of Plateau culture" (Ray 1939, p. 149).

Ray bases his analysis almost entirely on the non-material aspects of culture with the exception of house and canoe types. Of these, only house remains are likely to be preserved in sufficient quantities to allow comparative analysis, and at present the information on housepits from the Canadian Plateau is too meagre to warrant any comparisons. It may be possible, however, to examine the subdivisions by a comparison of other artifact types. It should be pointed out that to date the archaeological evidence is slight compared with the ethnographic data available. Although one can argue that projectile points represent valid products of cultural traditions and are thus suitable for comparative analysis, I think that artifacts functioning in the economic sphere can be independent of a non-material manifestation, such as the Guardian Spirit quest. In other words, if the emergence of cultural sub-areas resulting from the comparative analysis of material elements should not agree with the sub-areas delineated by the examination of ethnographic non-material culture traits, one study does not necessarily invalidate the conclusions of the other. On the other hand, a close correspondence may be indicative of the success of the comparative method in establishing Plateau sub-areas.

The archaeological sites discussed above can be placed in the Plateau sub-areas as set out by Ray. Few archaeological investigations have been conducted in the northern sub-region of the Plateau, Borden's (1952) Chinlac village excavation being the only example of controlled investigations in a recent site. In the central province are the sites in the Kamloops-Chase area, EeRh:1, the Nicola Valley, and the Fraser River sites. The sites on the Upper Columbia River in the State of Washington are within the American Plateau, as are the remainder of the sites along the Columbia River and its tributaries. The Kamloops-Chase area sites and those along the Columbia River to The Dalles are within the central longitudinal sub-area. In the western section are the Fraser River sites and The Dalles region. EeRh:1 at Cache Creek straddles the two sub-areas.

Some artifacts are found only in the Canadian Plateau, others are more common there, and still others are Plateau-wide with apparently little variation. Ground slate knives and *Pecten caurinus* shells are limited to the Canadian Plateau. Late sites along the Columbia River contain notched pebble net sinkers; the Canadian sites have yielded none.

Whetstones, fairly common in the north but scarce in the American Plateau, coincide with the greater emphasis on bone and antler tools in the Canadian sites. Although the distinctive steatite carving complex is occasionally reported from the American Plateau, pieces in this tradition appear far more often to the north. Antler harpoon heads are fairly common in the Canadian sites and are rarely encountered in collections to the south. The Upper Columbia River survey did produce eight examples, but seven of these came from sites between the International Boundary and Kettle Falls, the southernmost penetration of the Lakes Indians, whose ethnographic territory extended into Canada. Most of the chipped point forms are found throughout the Plateau, although regional differences, largely in the incidence of forms, can be detected. The very high percentage of side-notched triangular points from Chase, for example, distinguishes this site from others reported in the Plateau. The multi-notched triangular point is apparently a Canadian Plateau feature, as is the triangular point with the asymmetric spur. It is not that the latter type does not occur in the American Plateau, it simply is more common in the Canadian sites. The longitudinal sub-areas are also apparent from the archaeological assemblages, but the differences are usually not so pronounced as the lateral divisions.

The Kamloops Phase in British Columbia Prehistory¹

Just as Ray's (1939) analysis of ethnographic Plateau culture indicated the presence of sub-areas, the archaeological assemblages from recent, but pre-ethnographic, sites suggest the continuity of these divisions with prehistoric divisions. As mentioned above, the lateral division at about the International Boundary, or perhaps a little south of it, is readily apparent. The artifacts from the southern portion of the Canadian Plateau display a high degree of

¹The 1964 Lochmore-Nesikep Creek project excavations sampled two pithouse sites of the Kamloops phase (Cow Springs—EdRk:5 and McPhee—EdRk:6). The information gained from these sites on the Fraser River has not yet been fully processed and is not included in the present review of the Kamloops phase.

similarity from the Fraser River sites over to the Shuswap Lakes and the Chase site. To express the basic similarity of these assemblages, I propose the term 'Kamloops phase,' and intend it to be used within the framework established by Willey and Phillips (1958).

Spatially, the Kamloops phase is restricted to a region bounded on the west by the Fraser River between Lytton and Lillooet and on the east by the Chase area and perhaps the Shuswap Lakes (*see* Figure 2). The precise limits of the region included in the phase are unknown owing to the dearth of archaeological collections from so much of southern British Columbia. Although the distribution outlined above is tentative, it seems to coincide fairly well with the ethnographic territories of the Upper Thompson and southern divisions of the Shuswap. The ethnographic descriptions by Teit (1900, 1909) suggest that these are similar groups.

The Kamloops phase components probably range from approximately A.D. 1250 to A.D. 1800. Two radiocarbon assays of a single charcoal sample from the Cow Springs site (EdRk:5) on the Fraser River indicated dates of A.D. 1125 and A.D. 1175 (GX 406— 825 ± 85 ; GX 406 (2)— 775 ± 95 B.P.). A terminal date of A.D. 1800 is suggested because by that time numerous trade items of non-Indian origin were entering the Canadian Plateau, displacing aboriginal crafts.

Most of our knowledge of the Kamloops phase comes from burial sites, although some habitation sites have been investigated. Sites considered components of the Kamloops phase are listed from east to west in Table 20. Although the Kamloops phase is named after the sites investigated by Smith (1900), the type site is Chase.

TABLE 21—*Kamloops phase components*

Site	Location	Type of Site	Reference
Chase (EeQw:1).....	Chase	Burial	<i>See above</i>
Large.....	Kamloops	Burial	Smith 1900
Government.....	Kamloops	Burial	Smith 1900
EeRh:1.....	Cache Creek	Burial	Borden 1956
Various sites.....	Lytton	Burial	Smith 1899a
		Habitation	
Nesikep Creek.....	Nesikep Creek	Habitation	Sanger 1964
(Zone I)			
Mile 28 Ranch.....	Mile 28 Ranch	Burial	
Texas Creek.....	Texas Creek	Burial	
Cow Springs.....	Nesikep Creek	Habitation	Sanger 1966
McPhee.....	Nesikep Creek	Habitation	Sanger 1966

Some artifacts are unique to the Kamloops phase, whereas the relative incidence of others is diagnostic. The projectile points are usually of the small, side-notched variety, with a number exhibiting more than two notches, and others with an asymmetric spur. There are some pentagonal points and a few corner notched and basally notched specimens. A small asymmetric leaf-shaped point is common (Plate XIV). Chipped artifacts are usually made of glassy basalt; the various impure quartz combinations are very rare. No microblades are known from this phase although they occur in quantities in earlier components. There is an emphasis on the grinding and polishing of

stone. The jade celts are usually asymmetrically bevelled with straight bits. Tubular pipes of the trumpet variety are common, with and without flanges at the mouthpiece. Stylized carving in steatite is known from the Chase site but has not been found in other components. Because the spatial distribution of the steatite carving complex coincides in part with the area encompassed by the Kamloops phase, one is perhaps justified in assigning at least some of the steatite pieces to the phase. Stone carving, usually in the form of zoomorphic figures, is noted on hand maul tops. Also present are harpoon heads and antler tine clubs. In shell there are the *Pecten caurinus* rattles recognized from a number of components, the ubiquitous *Dentalium*, and a few *Olivella*. The distribution of the wooden masks similar to the one from Chase is not known.

The only winter dwellings of the Kamloops phase to have been excavated are those at Lytton investigated by Smith (1899a). His report does not contain detailed descriptions of the house type, but the ethnographic, circular, semi-subterranean houses seen by the early explorers and described in detail by Teit (1900) were probably in use. Considerably more is known about the burial practices. The primary flexed pit burial accompanied by artifact inclusions and interred in sandy soil is typical. A variation of this practice, and probably later in time, is the cist burial with a cairn of rocks above the grave. The subsistence pattern was undoubtedly specialized to the exploitation of the riverine resources, with plants and large mammals providing a second major source of food. Artifacts functioning in the subsistence quest are much like those described in the ethnographic accounts of the Thompson and Shuswap. Finally, the social organization during the Kamloops phase was probably quite similar to that recorded for the Thompson and Shuswap. However, the tentative suggestions (*see* Part I) of socioreligious activities not mentioned in the ethnographies indicate the need for some caution in attempting to correlate the historic social organization with that of the Kamloops phase.

Within the Kamloops phase it is possible to discern two spatial divisions based upon the relative incidence of certain artifact types. In the eastern portion wapiti is used almost exclusively for objects in antler and bone, and in the west along the Fraser River deer is utilized. This probably reflects not so much a matter of preference for deer among the western groups but rather the infrequency of wapiti in the heavily wooded mountains. To the east, around Kamloops, the elevated open parklands represent ideal wapiti range. Spindle whorls, carved in steatite, have been found in sites along the Fraser and may indicate the presence of weaving, possibly of mountain goat wool. Nowhere are digging stick handles as common as they are at Chase. It may be that the larger antler of wapiti, as compared with deer, results in superior handles and that the Fraser River groups possibly manufactured handles almost exclusively of wood. On the other hand, the quantities of salmon ascending the Fraser River may have resulted in a less extensive exploitation of root foods. Group B harpoon heads (page 111) are found only in the eastern region, paralleling the ethnographic distribution. All the above differences are attributable, at least in part, to slight ecological variations. Other contrasts are less easily explained.

Bear penis pendants, present in the Large site collection at Kamloops and in the Chase assemblage, have not been noted from sites along the Fraser. This distribution may reflect the prominence of bear in Shuswap cosmology. In the decoration of plastic materials, the tendency at Chase is to engrave the antler pieces to the almost total exclusion of bone; the reverse seems to be the case in the Fraser River components. Strangely absent from the Fraser assemblages are whale bone clubs, which are present at Kamloops and Chase. An explanation of this distribution must await the results of future investigations. In conclusion, the internal differences noted in the Kamloops phase are not so impressive as the overall similarities, and unless further excavations produce evidence to the contrary, there is little to be gained by splitting the phase into sub-phases, on either a temporal or a spatial basis. Finally, it is noted that the spatial divisions—the Kamloops–Chase area to the east and the Fraser River to the west—coincide with the ethnographic distribution of the Shuswap and Thompson languages.

Conclusion

In ethnographic times, the Kamloops–Chase area was slightly north of the geographical centre of the Plateau culture area. It is not surprising, therefore, to find that a late prehistoric assemblage at Chase reflects the general Plateau culture. The artifacts from Chase suggest affinities with the Upper Columbia River assemblages and with some materials recently excavated from the area around the confluence of the Okanagan and Columbia rivers. The relationships with sites at Kamloops and along the Fraser River from Lytton to Lillooet are closer. The nature of these last affinities has led to the concept of the Kamloops phase encompassing the archaeological assemblages of south-central British Columbia provisionally dated between A.D. 1250 and A.D. 1800.

Additional information on the Kamloops phase would be especially desirable. At present, most of the components are burial sites, and consequently too little is known about settlement and subsistence patterns. Although the ethnographies can be employed to supply some of the missing details, the presence in the Chase assemblage of traits not mentioned in the ethnographic reports indicates the need for some caution. A program tailored to obtain additional information on the Kamloops phase should include site surveys and further excavation of pithouse village sites.

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Appendix I

Location and Description of Burials and Inclusions

Burial 1

Location: Square East, 170–175 feet; North 0–5 feet; depth 12 inches.

Position: On back, oriented east–west, skull to east and facing west, legs tightly flexed and turned to left.

Sex: Unknown

Age: Young child

Artifacts:

EeQw:1-101 – Antler digging stick handle

102 – Antler sap scraper

103 – Unknown antler object

104 – H-shaped piece of antler

105 – Drilled antler fragment

106 – Carved antler fragment

107 – *Dentalium* shell necklace

Burial 2

Location: Square East, 175–180 feet; North 0–5 feet; depth 12–14 inches.

Position: On back, oriented east–west, skull to east and facing north, legs tightly flexed and turned to left, skull turned to right.

Sex: Unknown

Age: Young child

Artifacts: None—Very fragmentary remains of some small mammal foot bones found between the right humerus and the ribs may represent an inclusion.

Burial 3 (Plate III, A and B)

Location: Square East, 175–180 feet; South 0–5 feet; depth 20 inches.

Position: On left side and flexed, oriented north–south, skull to north and facing south.

Sex: Male

Age: 42–47

Artifacts:

EeQw:1-81 – Birchbark basket (?) fragments

108–110 – Chipped knife

111 – Chipped point

112 – Obsidian chip

113 – Bone point

- 114 – Bone creaser
- 115 – Crystal quartz implement
- 116 – Crystal quartz chipped knife
- 117 – Raw material—chalcedony
- 118–120 – Smoothed stones
- 121 – Chipped point
- 122 – Jade celt
- 123 – Raw material—chalcedony
- 124 – Bone point (centre of leister)
- 125, 126 – Bone points (side points of leister)
- 127 – Bone needle
- 128 – Fragment of bone artifact
- 129, 130 – Split beaver incisors
- 131 – Bone point
- 132 – Bird ulna (species unknown)

EeQw:1-133 – Bird bone (species unknown)

- 134 – Antler point
- 135 – Bone point
- 136 – Split marmot incisor
- 137 – Fragments of small mammal bones
- 138 – Small bird bones
- 139 – Bone point or barb
- 140 – Bird beak (species unknown)
- 141, 142 – Bone point
- 153 – Phyllite slabs
- 157 – Antler fragment
- 158 – Bird beak (Hooded Merganser) (*Lophodytes cucullatus*)

Burial 4

Location: Square East, 100–105 feet; South 15–20 feet; depth 20 inches.

Position: On right side and flexed, oriented north–south, skull to north and facing west.

Sex: Unknown

Age: Infant

Artifacts:

EeQw:1-143, 144 – Miniature bone bows

- 145 – Pierced shell ornament
- 146 – Antler fragment
- 147 – Antler fragments
- 148 – Pierced shell ornament
- 149 – Bird beak (Red-breasted Merganser) (*Mergus serrator*)
- 156 – White ochre

Burial 5

Location: Square East, 35–40 feet; North 0–5 feet and East 40–45 feet; North 5–10 feet; depth 10–16 inches.

Position: On right side and flexed, oriented east–west, skull to west and facing south.

Sex: Male

Age: Adult

Artifacts:

EeQw:1-150 – Jade celt

151 – Fragmentary wooden object

152 – Red ochre

153 – Bone creaser

155 – Birchbark container

Burial 6

Location: Square East, 20–25 feet; South 5–10 feet and East 20–25 feet; South 10–15 feet; depth 2 inches.

Position: Unknown—burial badly disturbed

Sex: Unknown

Age: Unknown

Artifacts:

EeQw:1-72 – Chalcedony scraper

159 – Steatite bead

Also some charred antler and bone fragments

PLATES I – XIV

THE CHASE BURIAL SUITE (EeQw:1), BRITISH COLUMBIA

PLATE I

The South Thompson River Valley

Archaeological sites are frequently located on the broad, flat floodplains. Looking upstream towards the east.



PLATE II

The Chase Site

- A—Prior to the excavations of the relic collectors the ridge was covered with grass. In the background is the South Thompson River. View to the east. (Harrison photo)
- B—The road cut profile with the slumped, laminated glacial Lake Thompson silts on the left and the darker sand on the right. Photograph taken from the site illustrated in A. (Harrison photo)



A



B

PLATE III

Burial 3

- A—Burial 3 with artifact inclusions in the foreground. A jade celt or adze blade is pedestalled beside the left tibia.
- B—Artifact inclusions with Burial 3. Of interest are the three slender bone leister points in the lower right corner of the illustration.



A



B

PLATE IV

Stone Artifacts

A—Jade celts or adze blades (University of British Columbia Collection)

(a) EeQw:1-122

(b) EeQw:1-41

(c) EeQw:1-50

(d) EeQw:1-140

B—Steatite trumpet pipes from a private collection (From a colour transparency by W. Duff)



PLATE V

Steatite Bird Bowl

Various views of a small steatite bird bowl from a private collection (Photographs made from colour transparencies by W. Duff)



a



b



c

PLATE VI
Steatite Bears
(Kamloops Museum Collection)



PLATE VII
Steatite Human Figure Bowl
(Kamloops Museum Collection)



PLATE VIII

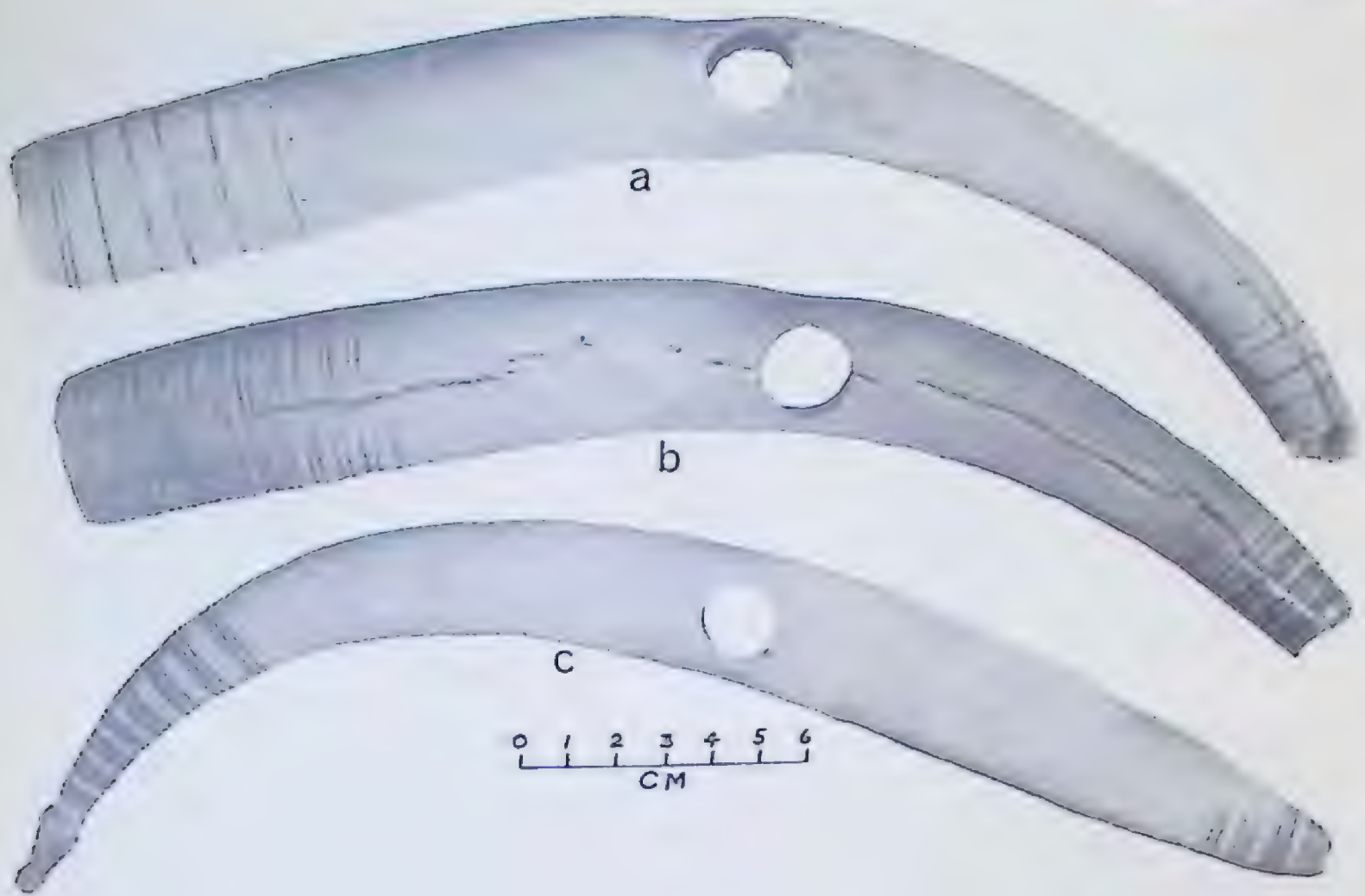
Antler Digging Stick Handles

A—Digging stick handles—top view (University of British Columbia Collection)

- (a) EeQw:1-66
- (b) EeQw:1-65
- (c) EeQw:1-101

B—Digging stick handles—bottom view illustrating the socketed ends of the handles

- (a) EeQw:1-66
- (b) EeQw:1-65
- (c) EeQw:1-101



A



B

PLATE IX
Antler Tine Clubs
(Specimens from the Kamloops Museum Collection)
(a) A679
(b) A667b

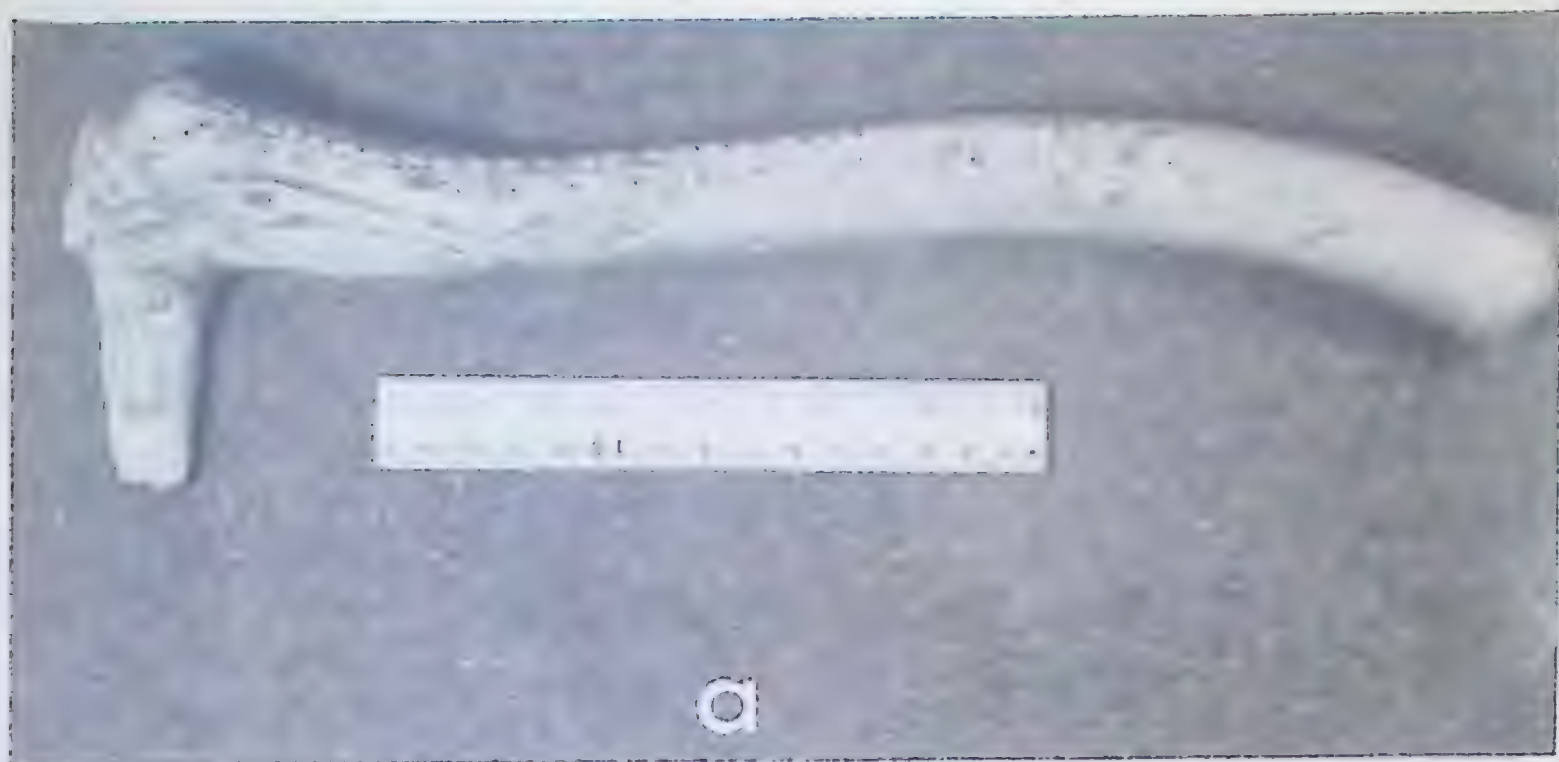
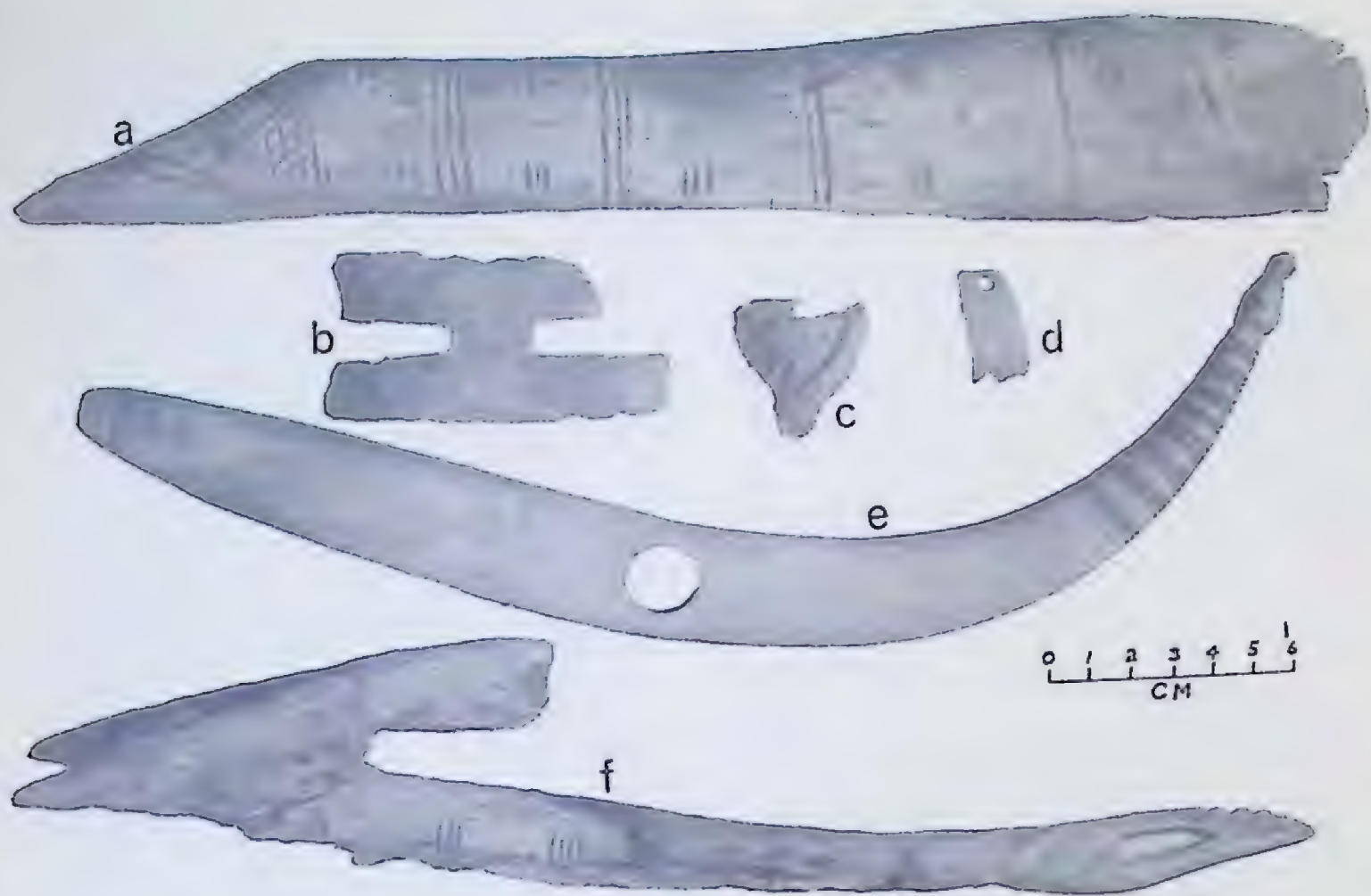


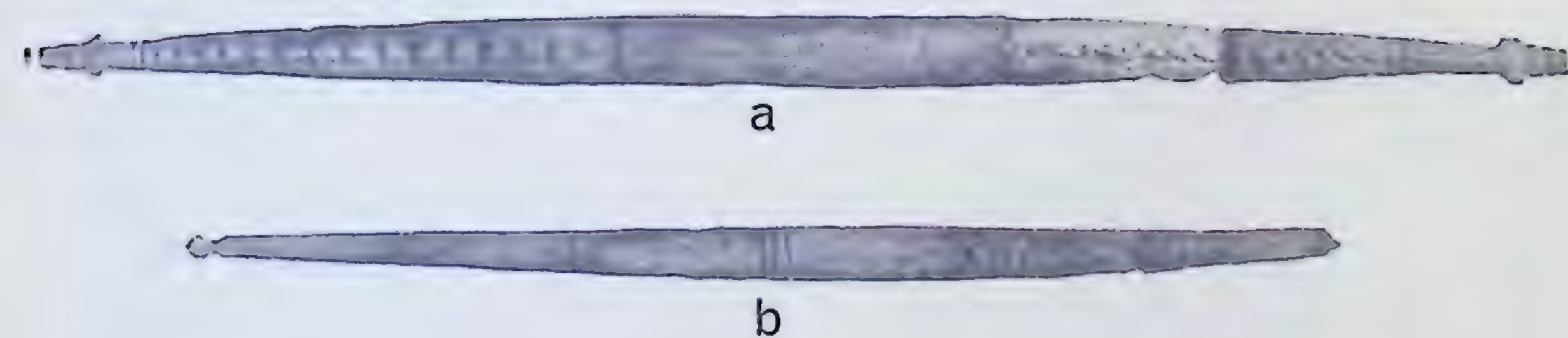
PLATE X

Antler and Bone Artifacts

- A—Artifacts associated with Burial 1
(Specimens from University of British Columbia Collection)
- (a) Sap scraper (EeQw: 1-102)
 - (b) H-shaped object (EeQw: 1-104)
 - (c) Fragment of carving (EeQw: 1-106)
 - (d) Pierced fragment (EeQw: 1-105)
 - (e) Digging stick handle (EeQw: 1-101)
 - (f) Unknown object (EeQw: 1-103)
- B—Miniature Bows associated with Burial 4, an infant burial
(University of British Columbia Collection)
- (a) EeQw:1-143
 - (b) EeQw:1-144



A



B

PLATE XI

Birchbark Container

A—Birchbark container found beneath cranium of Burial 5
(Specimen in University of British Columbia Collection)
(EeQw: 1-155), length 38.0 cm; width 16.0 cm.

B—X-ray photograph of container. A stone bi-point is visible in the centre, with other
lithic artifacts around the edges. (X-ray courtesy of Drs. Miller and Spiro, Van-
couver, B.C.)



A



B

PLATE XII

Copper Ornaments

(All specimens from the University of British Columbia Collection)

- (a) EeQw: 1-78
- (b) EeQw: 1-77
- (c) EeQw: 1-79
- (d) EeQw: 1-80

PLATE XII

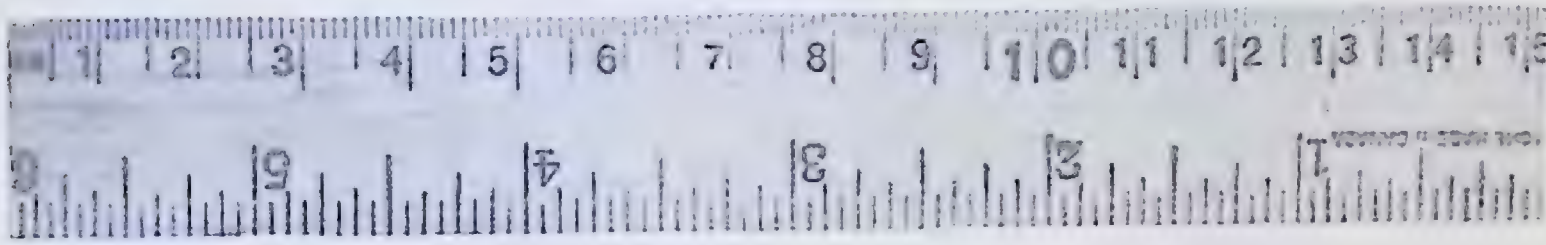
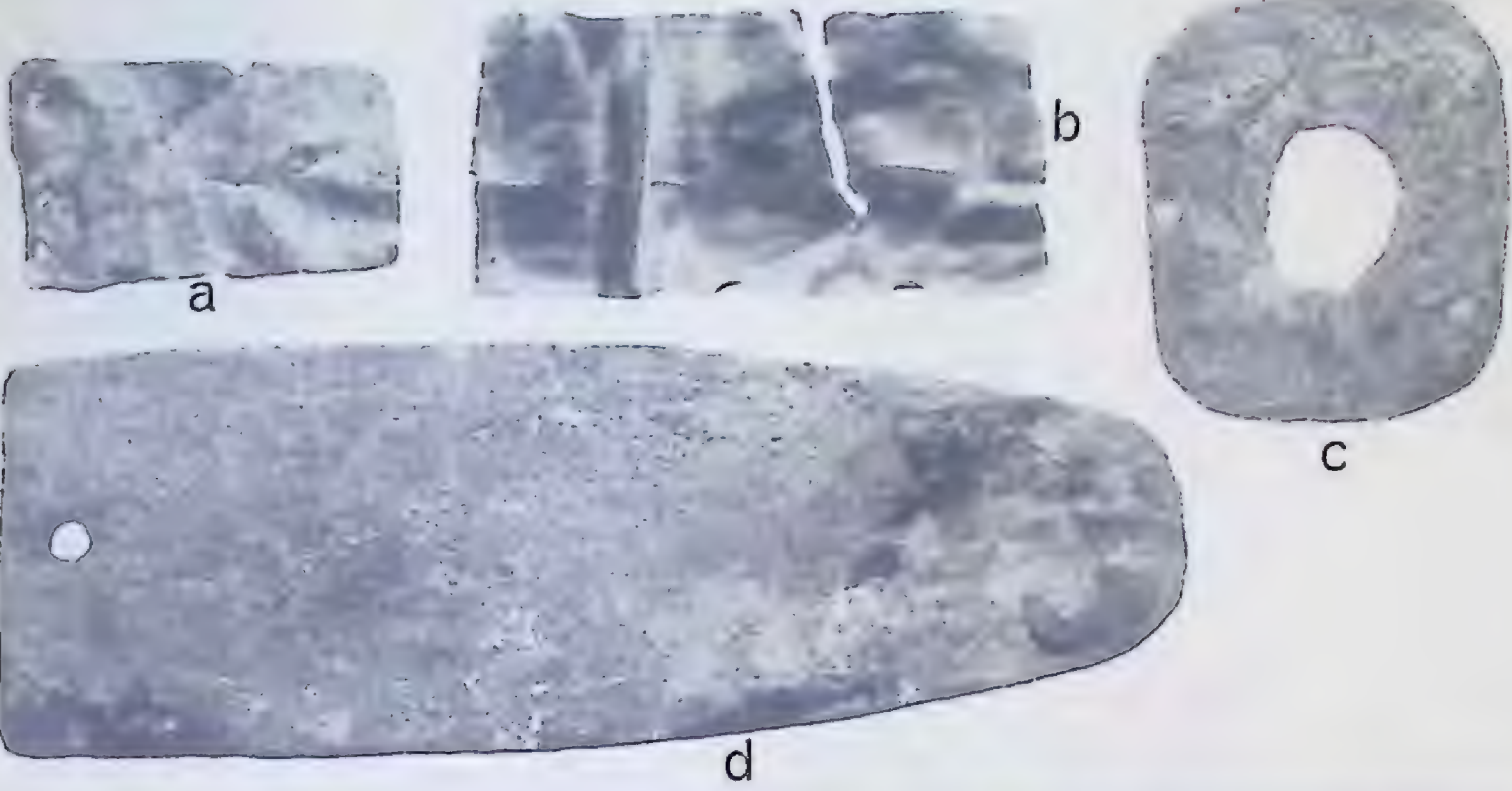


PLATE XIII

Artifacts Associated with Burial 1, EdR1:10
(National Museum of Canada Collection)

See text for identification of specimens

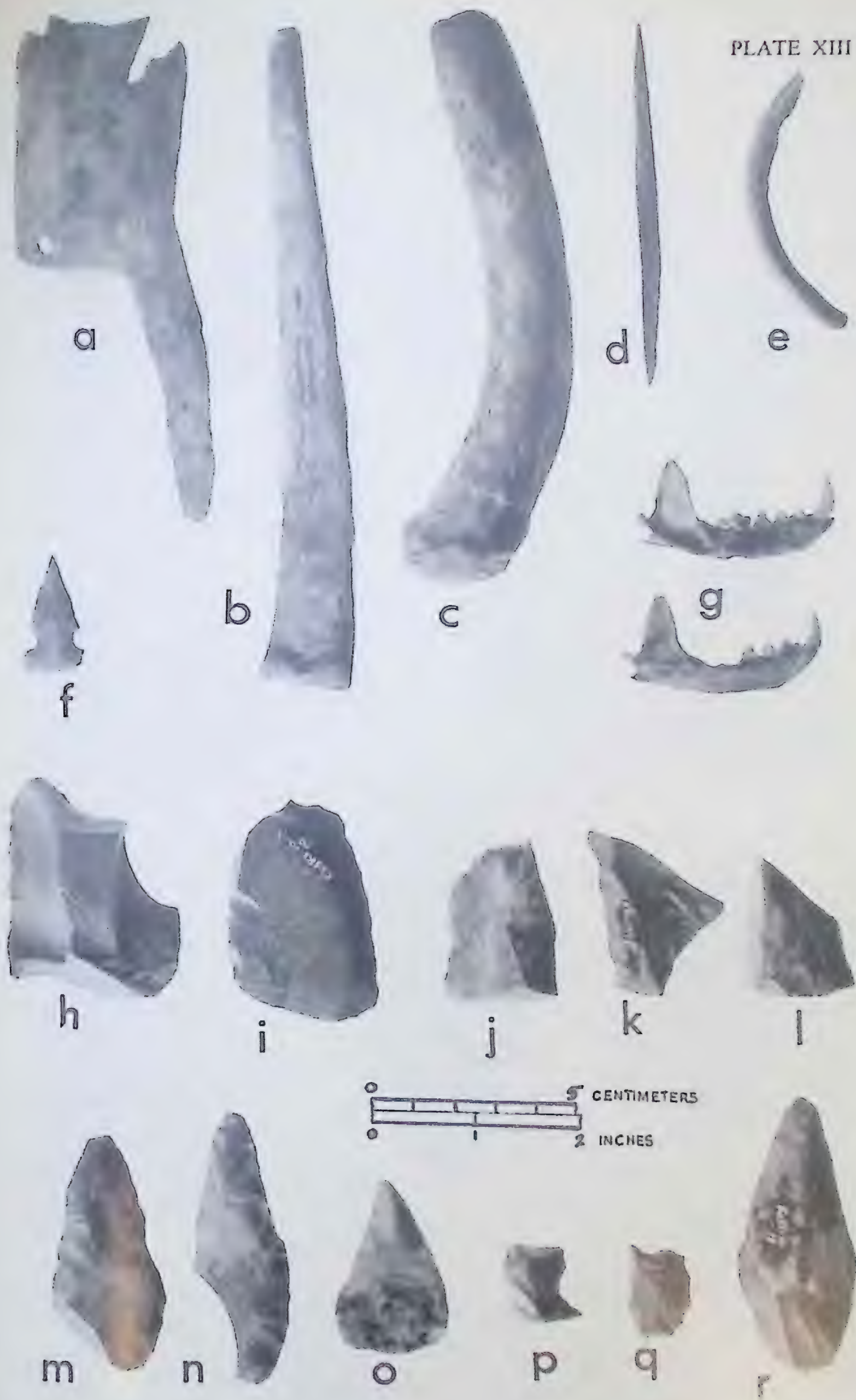
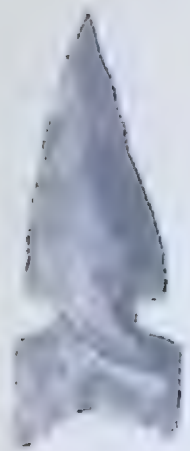


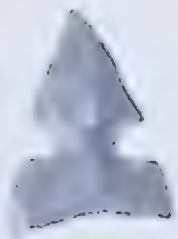
PLATE XIV

Typical Kamloops Phase Projectile Points
(National Museum of Canada Collection)

- (a) McPhee site (EdRk:6-14)
- (b) McPhee site (EdRk:6-31)
- (c) Cow Springs site (EdRk:5-57)
- (d) Lytton—site unknown
- (e) Lytton—site unknown
- (f) Stein River—site unknown
- (g) Stein River—site unknown
- (h) Lytton—site unknown
- (i) Lytton—site unknown
- (j) Lytton—site unknown
- (k) Lytton—site unknown
- (l) Lytton—site unknown



a



b



c



d



e



f



g



h



i



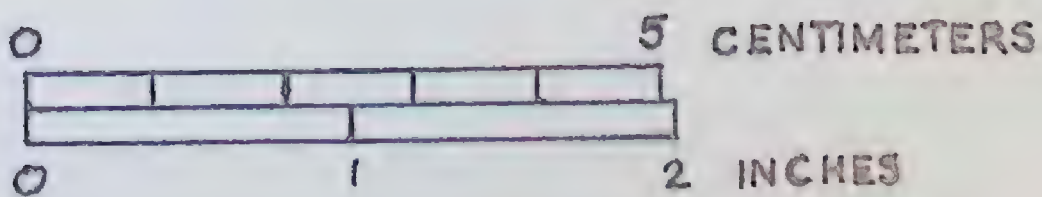
j



k



l



FURTHER OBSERVATIONS ON THE HUMAN MANDIBULAR REMAINS FROM SUGLUK AND MANSEL ISLANDS

BY DAVID R. HUGHES

RÉSUMÉ

Les restes humains qui s'associent à la culture Dorset sont jusqu'à présent peu nombreux. L'auteur du présent article fait des observations sur d'autres caractéristiques biométriques et odontologiques que présentent les mandibules découvertes dans les gisements de culture Dorset des îles Sugluk et Mansel. L'analyse d'un certain nombre de ces caractéristiques semble confirmer les affinités esquimaudes des êtres humains que les traits caractéristiques en question représentent.

SUMMARY

Human remains associated with the Dorset culture are, so far, few in number. In this article the writer comments upon certain additional biometric and odontological characteristics of the mandibles recovered from Dorset sites on Sugluk and Mansel islands. Confirmation of the Eskimo affinities of the individuals represented is forthcoming from an analysis of certain of these characteristics.

Introduction

The mandibular remains that form the main subject of these observations were collected by Dr. W. E. Taylor, Jr., of the National Museum of Canada in August and September 1958. From their archaeological context they are considered to represent individuals from populations associated with the Dorset culture who lived on Sugluk and Mansel islands. The Sugluk find comes from an early Dorset stratum; the Mansel find is attributed to middle Dorset (Taylor 1964, p. 197). Certain morphological aspects of the remains have already been discussed by Oschinsky, who concluded from his examination that there was convincing evidence of Eskimo physical affinities (Oschinsky 1960, 1964).

The paucity of excavated Dorset human remains suggested to the writer that it would be useful to undertake a biometric description of the material now preserved at the National Museum, as well as to make an odontological commentary upon certain features not previously discussed. Apart from the remains from Sugluk and Mansel islands, there was available for comparative purposes the mandible from the adult skull recovered at the Imaha site,

Payne Bay, also by Taylor. These remains have been attributed by him, with clearly stated reservations, to a Dorset culture and have been fully described by Laughlin (Laughlin and Taylor 1960). The comparison that could now be attempted was limited, however, by the virtually edentulous condition of the Payne Bay mandible and by the suspicion that certain of its biometric characters were distorted, probably because of the post-mortem deformation earlier mentioned by Laughlin (*op. cit.*, p. 8). Added to this deformation was the tendency, as a mandible becomes progressively edentulous, for the mandibular angle (between corpus and ramus) to become more obtuse; for biometric characters such as condylar height to be decreased; and for maximum projective height to be increased (Keen 1945, p. 82-83). The mandibular biometric definitions used here are those defined by Morant (1936, p. 84-122).

ASSESSMENT OF SEX

The writer agrees with the assessments of sex made respectively by Oschinsky and Laughlin, namely: that the Sugluk find represents an adult female, that the Mansel find represents a small adult male, and that the Payne Bay find represents a robust adult male. Although anatomical assessments of sex are inherently somewhat subjective, biometric characters such as condylar width, symphyseal height, ramal breadth, and bimental breadth (Morant, *op. cit.*) frequently offer some more objective reassurance. In the case of the Payne Bay mandible there were both cranial and post-cranial remains as a reassurance.

ASSESSMENT OF AGE AT DEATH

The stages of dental eruption are very similar in the Sugluk and Mansel mandibles. The third molars have fully erupted in each case, but a disparity in the amount of occlusal attrition is manifested. The Mansel mandible displays little sign of attrition on the two third molars, but the one remaining third molar in the Sugluk mandible exhibits distinct wear facets buccally and lingually. Although both individuals may have been 20 to 25 years old at death, it is possible that the Sugluk female was slightly older than the Mansel male at time of death, assuming dietary habits and tooth usage to have been similar. Leigh (1925) has suggested, however, that female Eskimo dentitions are more subject to wear than male ones, although this observation is not borne out in a later inquiry (Goldstein 1932). Referring to Aleuts, in accounting for the degree of attrition Moorrees (1957, p. 132-133) stresses increasing age and ancillary use of teeth for such activities as hide-chewing more than any sexual dimorphism.

Estimates of the age at death from the evidence of dental attrition alone are obviously hazardous, however, and "even when made by experienced people, usually amount to little more than guesswork" (Miles 1963, p. 198). Even the availability of the cranium as evidence does not relieve the misgivings of some workers. Stewart, for example, comments in connection with the Labrador Eskimo, "I have very little confidence in rules for aging the skull, particularly in a group such as the Eskimos . . ." (1939, p. 31).

Laughlin suggests an age at death of between 35 and 45 years for the Payne Bay individual, there being several maxillary teeth remaining in situ for study, and concludes that "the skull may be reliably that of a middle-aged adult" (Laughlin and Taylor 1960, p. 7).

METRICAL DATA

(a) MANDIBLE

Measurements were taken in accordance with the biometric technique described by Morant (1936, p. 84-122). Where the mandibles have been damaged or distorted, biometric values considered near the original ones are accompanied by a question mark; values that can only be approximations are accompanied by two question marks. Such approximations can be made, it is suggested, in certain circumstances where only one side of the mandible is preserved, assuming for this purpose the symmetry or near-symmetry of the two mandibular halves and the positive identification of the median sagittal plane. Measurements are shown in millimetres and appear in Table 1. For the Payne Bay mandible, only those characters that are unlikely to have been affected by the post-mortem distortion have been included. As an indication of the amount of deformation in the mandible, an estimated bicondylar breadth of 133.0 mm may be compared with a maximum breadth of 125.0 mm, measured between the lateral margins of the mandibular fossae in the base of the cranium.

The sparsity of available biometric data offers no incentive to pursue a comparative analysis. It is enough to note that, disregarding all values for characters that are estimations, the observations for the three crania fall within the observed ranges of biometric measurements for the series of Eskimo mandibles preserved in the National Museum of Canada. The only character that is in any way extreme is the Sugluk ♀ value for ZZ, that is, 49.0 mm, which is the highest value observed in female Eskimo mandibles in the N.M.C. collections.

TABLE 1—Measurements or estimates of measurements

Biometric Character	Mansel ♂ ¹	Sugluk ♀ ²	Payne Bay ♂ ³
<i>W</i> ₁ bicondylar breadth...	?121.0	??112.0	—
<i>GoGo</i> bigonial breadth.....	?102.5	??100.0	—
<i>CrCr</i> bicoronoid breadth...	? 93.0	—	—
<i>ZZ</i> bimental breadth.....	50.0	49.0	—
<i>ML</i> max. proj. length.....	106.5	??100.0	—
<i>CpL</i> proj. length corpus...	? 83.0	—	—
<i>RB'</i> min. rameal breadth..	41.0	36.5	40.0
<i>M</i> ₂ <i>P</i> ₁ mol. — premol. chord..	29.5	26.0	—
<i>H</i> ₁ sagittal height.....	33.0	27.0	31.0
<i>M</i> ₂ <i>H</i> height at <i>M</i> ₂	25.0	21.0	—
<i>CrH</i> coronoid height.....	60.0	56.5	50.5
<i>IH'</i> sigmoid notch depth ⁴ .	? 17.0	—	13.0

¹JcGu-2-61.

²KkFb-7-55.

³JaEj-1, Burial 1.

⁴Maximum depth of sigmoid notch from line tangential to coronion and condylion.

(b) TEETH

The metrical approach to odontological studies is fraught with dangers as has been recently re-emphasized by Goose (1963, p. 125-148). It is therefore essential for workers quoting odontometrical values to define their measurement procedures. The measurements appearing in Table 2 represent maximum projective mesio-distal diameters (*MdD*) and maximum projective bucco-lingual diameters (*BlD*) respectively. Allowance has been made, where necessary, for any obviously rotated teeth* to obviate spuriously large measurements and to ensure exclusion of broken or badly attrited teeth. The measurements were taken with vernier calipers fitted with needle points, and the procedure was repeated as a check on accuracy. In Table 2, *MdD* and *BlD* are in millimetres, *C.A.* indicates *crown area* ($MdD \times BlD$), *C.I.* indicates *crown index* ($100\ BlD/MdD$), and *C.M.* indicates *crown module* ($MdD + BlD$, divided by 2). Comparative data for East Greenland Eskimo

TABLE 2—*Odontometric values for Mansel and Sugluk mandibular teeth with comparative data*

Specimen or Series		<i>MdD</i> (mm)	<i>BlD</i> (mm)	<i>C.A.</i> (mm ²)	<i>C.I.</i>	<i>C.M.</i> (mm)
PM ₁	Mansel ♂	—	—	—	—	—
	E. Greenland Eskimo ♂	7.2	7.9	56.9	109.7	7.6
	Aleut ♂	7.0	7.8	54.6	111.4	7.4
	Sugluk ♀	6.9	7.4	51.1	107.2	7.2
	E. Greenland Eskimo ♀	7.0	7.4	51.8	105.7	7.2
	Aleut ♀	6.9	7.6	52.4	110.1	7.3
PM ₂	Mansel ♂	6.7	7.7	51.6	114.9	7.2
	E. Greenland Eskimo ♂	7.1	8.6	61.1	121.1	7.9
	Aleut ♂	7.2	8.4	60.5	116.6	7.8
	Sugluk ♀	—	—	—	—	—
	E. Greenland Eskimo ♀	7.0	7.7	53.9	110.0	7.4
	Aleut ♀	7.0	8.1	56.7	115.7	7.6
M ₁	Mansel ♂	10.5	11.0	115.5	104.7	10.8
	E. Greenland Eskimo ♂	12.0	11.6	140.2	96.8	11.8
	Aleut ♂	11.6	10.6	122.4	109.3	11.1
	Sugluk ♀	11.0	10.3	113.3	93.6	10.7
	E. Greenland Eskimo ♀	11.5	10.9	124.7	94.7	11.2
	Aleut ♀	11.2	10.3	114.6	110.2	10.8
M ₂	Mansel ♂	—	—	—	—	—
	E. Greenland Eskimo ♂	11.5	11.0	126.5	95.6	11.3
	Aleut ♂	11.2	10.6	120.1	93.7	10.9
	Sugluk ♀	10.2	10.0	102.0	98.0	10.1
	E. Greenland Eskimo ♀	11.3	10.6	119.8	93.8	11.0
	Aleut ♀	11.2	10.3	115.3	91.9	10.8
M ₃	Mansel ♂	11.6	10.1	117.2	87.0	10.9
	E. Greenland Eskimo ♂	11.4	11.0	125.4	96.4	11.2
	Aleut ♂	11.1	10.6	111.5	92.8	10.9
	Sugluk ♀	10.2	9.0	91.8	88.2	9.6
	E. Greenland Eskimo ♀	11.1	10.6	117.7	95.4	10.9
	Aleut ♀	11.3	10.3	119.4	91.6	10.8

*None was present in the material studied.

(Pedersen 1949) and for Aleuts (Moorrees 1957) are included; areas, indices, and modules were computed by the writer if not already published, and mean measurements were shown for these series.

No prolonged commentary on these values is necessary; the measurements indicate an overall correspondence in most respects between the specimens and series. The Mansel PM_2 and M_1 appear somewhat small by Aleut and East Greenland Eskimo standards; the Sugluk molars are also small in comparison with the respective female standards.

NON-METRICAL FEATURES

The morphological features of these mandibles have been described and analysed elsewhere (Oschinsky 1960; Laughlin and Taylor 1960), with the exception of certain odontological characteristics. It is proposed, therefore, to restrict comments under this heading to this second category.

Variability in cusp patterns of teeth is known to exist amongst human populations—particularly molar cusp patterns. The mandibular molar cuspid patterns that could be ascertained for the Mansel and Sugluk specimens are shown in Table 3; the notation is the one recently suggested (Jørgensen 1955; Erdbrink 1965) as an improvement on the older system of Hellman (1928). This new notation uses the X sign to denote a 1-4 cuspid contact (i.e., protoconid-entoconid contact) and a + sign to denote a cruciate pattern form, the Y sign being retained for a 2-3 cuspid contact (i.e., metaconid-hypoconid contact).

TABLE 3—Mandibular molar cuspid patterns

Mandible	Tooth		
	M_1	M_2	M_3
Sugluk.....	Y5	Y5	Y5
Mansel.....	+5	?5	X6
Payne Bay.....	(lost ante mortem)		

Although both the Mansel second lower molars were too damaged post-mortem to permit a clear assessment of the cuspid pattern, enough remains of the occlusal surfaces to indicate a five-cuspid rather than a four-cuspid pattern.

Dahlberg (1963, p. 170) claims, with reference to mandibular teeth, that "in all the Amerind groups reported in the literature the first molar is with very few exceptions a five-cuspid tooth. A decided shift to the four-cuspid variety is seen in the second molars and then back to five cusps in the third." Goldstein (1931, p. 228), writing of the M_1 - M_2 mandibular cusp pattern in Eskimos, observes that "in this respect the Eskimo appears to be unique; no other racial group . . . shows a 5-5 cusp number pattern more common than a 5-4 type." Confirmation, to a limited extent, of this suggestion—a conservative tendency to retain the five-cuspid second molar—comes from Moorrees in his study of the Aleut dentition (Moorrees 1957, p. 45). A similar degree of confirmation may be found in Pedersen's report on the dentition of the East Greenlanders (Pedersen 1949, p. 108); he also comments upon earlier and independent observations by Hrdlička, Ritchie,

Hoessly, and Krantz that yield similar conclusions on the teeth of Eskimos. In view of the antiquity of the Sugluk and Mansel remains, in terms of Eskimo prehistory, it is of some interest to note that these five-cuspid M_2 and M_3 patterns are apparent in what are considered to be the earliest remains of Canadian Arctic Mongoliforms so far discovered. Missing hypoconulids on the second and third molars (particularly the second molar) may well serve as discrete traits of some diagnostic value in attempts to distinguish between remains of early Eskimo and Indian populations. Through collating and analysing information of this kind, and by supplementing it with information relating to archaeological contexts, there is, in addition, the possibility, eventually, of estimating the rate at which a discrete odontological trait such as this may change, or may have changed, in populations of American indigenes.

The conformation of the gingival enamel boundary (also called the 'enamel line' and 'enamel margin') has been described and classified by Pedersen and Thyssen (1942, p. 454), by Pedersen (1949, p. 74), and by Lasker (1950, p. 196). Six types of conformation are recognized, ranging from an absence of any enamel extension to the extreme manifestation of the extension that continues inferiorly past the bifurcation of the roots. Table 4 shows the classification types observed in those molars of the Sugluk and Mansel mandibles that were in a condition to permit the study of this particular character.

TABLE 4—*Conformation of molar enamel margins*

Tooth		Buccal	LEFT	Lingual	Buccal	RIGHT	Lingual
M ₁	Sugluk.....	5		5	5		?
	Mansel.....	2		4	5		4
M ₂	Sugluk.....	6		?	6		4
	Mansel.....	6		4	3		4
M ₃	Sugluk.....	—	missing	—	4		?
	Mansel.....	5		5	6		4

Pronounced molar enamel extensions are reported to be very common on Eskimo molars characterized by bifurcations or grooves on the roots. In cases where such root features are absent, enamel extensions are not usually observed (types 1, 2, and 3 in the conventional classification). There is evidence that enamel extensions are also characteristic of North American Indians (Pedersen 1949, p. 138). Thus, as a diagnostic trait it is more likely to be helpful in distinguishing between, say, early European immigrants and Eskimos and Indians, than between the two Mongoliform peoples.

An enamel nodule or 'pearl,' separate from the enamel margin extension and inferior to it, became clearly visible bilaterally on the buccal margins of the Sugluk mandible following cleaning. In a discussion of these enamel nodules, Pedersen (*ibid.*, p. 149–155) noted their high incidence in Eskimos and that when present they "almost always exhibit the drops on their facial surfaces." He also suggested (*ibid.*, p. 140) that "the high incidence of pronounced enamel extensions in the Eskimo seems to have a racial back-

ground." In view of the paucity of data relating to this feature in other human populations, however, this suggestion may be premature.

The buccal surfaces of many of the Sugluk and Mansel teeth were too damaged post-mortem to permit a completely satisfactory assessment of the degree of expression of the protostylid (Dahlberg 1963, p. 162). The following observations can be made, however. The buccal surfaces of the Sugluk mandibular molars in general exhibit the conventional buccal groove. In three cases out of five this groove ends in a small pit; in one further case there is a well-defined pit which would correspond with Dahlberg's 'P' category (op. cit., p. 163). The Mansel molars have three buccal surfaces conventionally grooved, with no pit, and two buccal surfaces bearing grooves ending in pits. Pedersen (1949, p. 117-118) reported many very large pits in the teeth of the East Greenland Eskimo as having no enamel in the base. Moorrees (1957) reported the absence of developed protostylids in Aleuts from Nikolski and the westerly Aleutian Islands and few in his Kodiak Island subjects. It may be stated, therefore, that the Sugluk and Mansel mandibles conform to what is known generally of the absence of protostylids in Arctic Mongoliform populations.

Though no conclusions regarding the nature of the occlusal bite can be made because of post-mortem loss of incisors and the absence of maxillary dentitions, inspection of the wear facet on the left canine of the Sugluk mandible suggests that in that individual the bite was edge-to-edge.

DENTAL PATHOLOGY

No teeth had been lost ante mortem from the Mansel mandible. The left second premolar had been lost ante mortem from the Sugluk mandible.

The degree of attrition has already been referred to. Using the tentative classification illustrated by Brothwell (1963, Fig. 30, p. 69) the patterns of wear are as follows: Mansel: M_1 (4); M_2 (3); M_3 (2+); Sugluk: M_1 (4); M_2 (3+); M_3 (3+).

There seems to be no sign of calculus, or tartar, in any of the teeth available for study, although the degree of staining affecting the Sugluk teeth is a hindrance to precise observation.

Enamel hypoplasia is evident on the buccal surface of the left canine in the Sugluk mandible, presenting an appearance of slight mottling. The buccal surface of the right first molar of the Mansel mandible exhibits a similar degree of mottling, indicative perhaps of some non-chronic episode of disease or of dietary insufficiency during the eruption of the tooth.

Periodontal disease has left slight traces in the incisural region of the Mansel and Sugluk mandibles. There are no signs of apical or other abscesses; twelve sockets were available for inspection. There is no evidence of overcrowding of teeth in either mandible; in the Mansel mandible the canines and first premolars are slightly rotated in a lingual direction.

The post-mortem cracking and enamel loss that have affected many teeth make an assessment of the presence of caries difficult; there is probably at least one cavity on the occlusal surface of the left second molar of the Sugluk mandible.

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HUMAN REMAINS FROM NEAR MANUELS RIVER, CONCEPTION BAY, NEWFOUNDLAND

A Methodological Approach to the Question of Their Probable Affinities

BY DAVID R. HUGHES

RÉSUMÉ

L'auteur décrit dans la présente étude certains fragments d'ossements humains découverts près de la rivière Manuels, à Conception Bay (Terre-Neuve), et envoyés au Musée national du Canada pour y être examinés.

La nature fragmentaire de ces vestiges ne permettait pas de déterminer l'appartenance ethnique de l'individu concerné. En s'appuyant sur les quelques mensurations biométriques qu'on a pu effectuer, on a tenté de comparer ces fragments à d'autres séries de vestiges humains, et à des spécimens individuels, au moyen d'une statistique basée sur un grand nombre de distances diverses.

Il semblerait à première vue que les ossements en question soient ceux d'un Indien plutôt que d'un Esquimau ou d'un Européen, et qu'ils présentent des ressemblances avec des vestiges connus de Beothuk.

SUMMARY

In this study the author describes certain bony human remains recovered from near Manuels River, Conception Bay, Newfoundland, and forwarded to the National Museum of Canada for study.

The remains were fragmentary and this was an obstruction to an assessment of the population affinities of the individual represented. On a basis of the few biometric measurements that could be made, a comparison was undertaken by means of a multi-variate distance statistic with various other series of human remains and individual specimens.

The conclusions, which can only be very tentative, are that the individual represented by the bones was more likely to have been Indian than Eskimo or European, and that the individual showed some resemblances to known Beothuk remains.

Introduction

The remains¹ comprise an imperfectly preserved calvarium (the frontal and occipital bones being damaged); a damaged mandible with almost completely preserved dentition; portions of both maxillae together with some premolars and molars; the first five cervical vertebrae, only the atlas and apex being complete; and some small crushed pieces of turbinate bones. The degree of preservation, the amount of staining, and the lightness of the bones suggest that they are not those of a contemporary individual.

The age of this individual at death was about 18 years or slightly younger, the assessment being made from the state of dental eruption, the degree of dental attrition, and the progress of endocranial and ectocranial suture closure. The sex of the individual was female; the criteria for this judgment were the overall dimensions of the calvarium, the lack of rugosity, the degree of mastoid development, the bossing on the parietals, the obtuseness of the gonial angles, the size of the dental arch and teeth, and the gracility of what has been preserved of the right zygomatic arch. The maximum transverse diameter of the atlas (estimated as being very near to 72.0 mm) supports the sexual assessment, the value being closer to that customary of females than to that of males (Olivier 1960, p. 217).

The state of preservation of the remains precluded taking many conventional biometric measurements. The facial portion of the cranium was not recovered, and the loss of the outer table of bone from portions of the frontal and parietal bones has obliterated the precise position of nasion. A large part of the occipital bone is missing, so that the position of lambda cannot now be ascertained. The same kind of bony exfoliation that affects the anterior portion of the vault is noticeable to a lesser degree on the right ramus and corpus of the mandible. A slight degree of post-mortem deformation is observable, there having apparently been some lateral compression of the calvarium, presumably attributable to earth pressure.

It will be appreciated from the foregoing description of the state of preservation that a full biometric examination is not possible, and this, of course, is a handicap when the question of the populational affinities of the individual is raised. Any conclusions that may be drawn in comparative terms must therefore be regarded with caution in view of the inherent limitations upon the scope of the investigation.²

The biometric measurements that could be taken on the remains appear below. The technique is that outlined by Buxton and Morant (1933) as adapted by Mukherjee, Rao, and Trevor (1955) for the cranial observations

¹The remains were recovered near Manuels River, Conception Bay, were sent to the museum by Mr. J. J. Halley, 14 Topsail Road, St. John's, Newfoundland, and were received on October 12, 1965.

²That any examination of the remains was possible at all is due to the meticulous efforts of Mr. J. A. Deltaire and Mr. R. Cole, of the Archaeology Division, in cleaning, restoring, and preserving the bones.

and that of Morant (1923) for the mandibular ones. The abbreviations within parentheses are the customary biometric ones; one question mark preceding a measurement indicates a close approximation, and two question marks indicate an estimated value. All measurements are in millimetres.

CRANIAL DATA

Maximum glabello-occipital length (L) ?171.0; maximum bi-parietal breadth (B) 135.0; minimum frontal breadth (B') 90.0; basi-bregmatic height (H') 135.0; basi-nasion length (LB) ??86.0; nasion-bregma arc (S_1) 127.0; total sagittal arc (S) ?353.0¹; transverse bregmatic arc (T') ?303.0²; horizontal circumference (U) ?478.1¹; nasion-bregma chord (S'_1) ?113.0; maximum bi-zygomatic breadth (J) ??120.0 or over; foraminal length (FL) 35.0; foraminal breadth (FB) 29.0; biasterionic breadth (BaB) 93.0.

MANDIBULAR DATA

Bicondylar width (W_1) 101.0; condylar length (CyL) 15.0; minimum ramal breadth (RB) 32.0; molar-premolar chord (M_2P_1) 29.0; sagittal mandibular height (H_1) 25.5; mental foramina breadth (ZZ) 41.5; coronoid breadth ($CrCr$) 81.0; coronoid height (CrH) 56.0; height at M_2 (M_2H) 25.0; least height of incisura (IH) 41.5; greatest depth of incisura (IH') 12.0.

Amongst the cranial indices that may be computed from these measurements are the following:

100 B/L (cranial index) 78.9; 100 H'/L 78.9;
100 B/H' 100.0; 100 B'/B 66.7; 100 B'/L 52.6;
100 B'/H' 66.6; 100 H'/B 100.0

This individual may be described therefore as (a) mesocranic, i.e., moderately round-headed; (b) hypsicranic, i.e., having a cranium high in relation to its length; and (c) acrocranic, i.e., having a cranium unusually high in relation to its breadth. The cranial shape, viewed in *norma verticalis*, is rhomboidal.

The cranial capacity cannot be calculated directly because of the damage to the vault, but an approximation can be obtained by utilizing the Lee-Pearson formulae, that is, cranial capacity of female subjects = $812.0 + (0.000156 \times L \times B \times H')$ in cubic centimetres. This computation gives a result of 1298.17 cc. Reference to another method, the calculation tables of Welcker (Martin-Saller 1957, p. 472), yields a capacity of 1317 cc. As an approximation, therefore, a capacity of 1300 cc can be suggested for this individual. This value is frequently taken as the dividing point between euencephaly and aristencephaly.

Post-cranial measurements have been restricted to the atlas. Four measurements were made, permitting the calculation of three indices. The measurements (in mm) are A_1 total transverse diameter ?72.0; A_2 antero-posterior diameter 45.0; A_3 maximum transverse foraminal diameter 29.5;

¹Probably underestimated. ²Possibly affected by post-mortem distortion.

A_4 maximum antero-posterior foraminal diameter 27.5.¹ The derived indices are the following:

ATLAS

Body index ($100 A_2/A_1$)	62.5
Vertebral foramen index ($100 A_4/A_3$)	93.3
Baudoin's sexual index ($100 (A_1-A_3)/A_1$)	59.0

There is no tendency towards a scaphocephalization of the vault; the inclination of the frontal bone is almost vertical, and the presence of bossing gives the area a moderately bulbous or globular appearance. The parietals also exhibit a noticeable degree of bossing. Nothing can be suggested regarding brow ridge development because of the state of preservation of the remains; there is no trace of an external occipital protuberance, but a reconstruction of the contour of the posterior part of the calvarium suggests that there was originally some degree of occipital bunning or bulging. The mastoid processes are moderately large but smooth. Medially to the digastric notch, the mastoid part of the temporal bone has been grooved by the occipital artery. The tympanic parts of both temporal bones suggest deficiencies affecting the thin central areas, although post-mortem damage may well have contributed to the size of the aperture visible on the left side. The external auditory meatus is oval in outline and funnel-shaped. There are no exostoses, nor dehiscences; there is no unusual thickening of the tympanic plates. The mandibular fossae are normal in conformation and are moderately deep. The pterion is normal bilaterally, being a spheno-parietal contact. There are no epipteric bones or parietal notch bones. Metopism is absent, and it is unlikely that any Inca bone existed. Wormian bones, several of minute size, occur in the coronal suture and in remains of the occipital suture where there appear to be two small supernumerary ossicles at the left asterion. The suture patterns themselves comprise a fairly simple T-shape at bregma, with more markedly denticulate elaborations elsewhere. No signs of parietal foramina can be detected; they may have been obliterated by post-mortem erosion.

The mandible is small in overall dimensions and is smooth. It displays no trace of any lingual torus. It has a convex inferior surface to the corpus, resulting in a rocking movement when placed on a horizontal plane. There is some bilaterality of the mental ossicles, giving a prominent but small chin. The mandibular foramina are moderately large; the lingulae are small and not prominent; the mylohyoid line is clearly defined, but not prominent; there is no mylohyoid arch. Gonial eversion is absent. The attachments for the medial pterygoid muscles are well marked, however.

Next, let us turn to the question of what can be determined about the populational affinities of the Manuels River calvarium. The possibilities are presumably that it may be Mongoliform or non-Mongoliform. If Mongoliform, it may be Eskimo or Indian; if non-Mongoliform, it may be an early European settler or visitor. Hybridization is possible, of course, between any

¹The symbols A_1 , A_2 , and so on, are not conventional biometric ones, but they are used here as a convenience to indicate concisely the derivation of the indices.

two of these peoples, or indeed between hybrids. If the individual was Eskimo, it would be Eastern Eskimo; if Indian, then probably Beothuk or Micmac; if European, then probably of British or, less probably, of Scandinavian ancestry. The following cranial series and individual crania were extracted from the literature to serve as a basis for a metrical comparison.

Eskimo

- (a) Labrador Eskimo, 37 females, reported on by Stewart (1939).
- (b) Thule Eskimo, 10 females, reported on by Fischer-Moller (1937) and Hrdlička (1910).
- (c) Greenland Eskimo, 52 females, reported on by Hrdlička (1930).
- (d) Old Igloo Eskimo, 31 females, reported on by Hrdlička (1930).

Indian

- (a) Iroquois, 22 females, reported on by Hrdlička (1916).
- (b) Sho-Sho, 11 females, reported on by Hrdlička (1927).

British

- (a) English, 182 females, reported on by Young (1937).
- (b) Scottish, 47 females, reported on by Young (1937).

Icelandic

A series of 49 females from the period A.D. 900 to 1500, reported on by Steffensen (1953).

Newfoundland

Individual specimens are as follows:

- (a) The Manuels River calvarium, which is the subject of the present study.
- (b) An adult female Beothuk, described by George Busk, F.R.S. (1876). The measurements, originally recorded in inches, appear to have been taken with the care befitting a vice-president of the Anthropological Institute. The definitions of the measurements used are unambiguous, and the values are given in metric units. This individual is henceforth referred to as 'Beothuk A.'
- (c) A second Beothuk adult female, described by W. H. Prest (1897). The measurements again were taken with accuracy, recorded in inches, and, it is suggested, "they can not be in error more than one eightieth of an inch." Unfortunately, two of the three measurements used are ambiguous, being described as "glabella to occipital point" and "bregma to occipital condyle." These two measurements, therefore, can only be regarded as approximations to cranial length and basi-bregmatic height, respectively. This individual is now referred to as 'Beothuk B.'

- (d) A female calvarium, NMC XIII-A-2, collected by Dr. D. Jenness in 1927 at the North End of Long Island, Bay of Exploits, Newfoundland. There are no remarks in the records relating to provenience. This individual will be referred to by its index number.

The first step in the comparison was to inquire into the extent of the differences that might be revealed by the available metrical data. Only three variates, however, could be utilized, that is, *L*, *B*, and *H'*, as the state of preservation of the Manuels River calvarium restricted the number of possible measurements; certain measurements that might have been included in the comparison had not been taken on all the comparative material.

The nature of the problem suggested the use of some form of distance statistic; Penrose's 'size and shape' statistic was adopted. It is robust in form, simple to compute, highly correlated with more sophisticated statistics such as Mahalanobis's *D*², and entirely appropriate to use with small samples (Penrose 1954).

The first step is to transform the means for the series and the individual measurements of the four Newfoundland specimens into a standardized measure. For this purpose, pooled standard deviation estimates were calculated, that is, *L* 5.4; *B* 4.3; *H'* 4.1. The resulting standardized measures appear in Table 1.

TABLE 1—Means and individual measurements expressed in units of the population standard deviation estimates

Series or specimen	<i>L</i>	<i>B</i>	<i>H'</i>
Manuels River.....	31.67	31.40	32.93
Labrador.....	33.26	30.02	31.46
Thule.....	33.67	31.42	33.10
Greenland.....	33.41	30.23	32.00
Old Igloo.....	33.48	29.74	32.54
Iroquois.....	33.11	30.77	32.43
Sho-Sho.....	32.22	30.93	30.24
English.....	33.63	31.56	29.88
Scottish.....	33.04	31.51	30.90
Icelandic.....	33.18	31.65	28.23
Beothuk.....	33.39	34.26	35.93
Beothuk B.....	32.20	33.19	35.41
XIII-A-2.....	31.76	31.40	30.49

The next step is to ascertain the differences between the point of origin proposed for the distance statistic, i.e., the Manuels River calvarium, and the other variates. These differences are listed in Table 2.

These differences (*d* values) are then summed for each vector, the total thus obtained being divided by the square of the number of characters employed (*m*²). This gives the size distance (*C*₀²), the formula being

$$C_0^2=[(d_1+d_2 \dots d_m)/m]^2=[\sum_1^m(d)]^2/m^2$$

TABLE 2—Differences expressed in standard measure between Manuels River calvarium and other series and specimens

Series or specimen	<i>L</i>	<i>B</i>	<i>H'</i>
Manuels River	0.00	0.00	0.00
Labrador	+1.59	−1.38	−1.47
Thule	+2.00	+0.02	+0.17
Greenland	+1.74	−1.17	−0.93
Old Igloo	+1.81	−1.66	−0.39
Iroquois	+1.44	−0.63	−0.50
Sho-Sho	+0.55	−0.47	−2.69
English	+1.96	+0.16	−3.05
Scottish	+1.37	+0.11	−2.03
Icelandic	+1.51	−0.25	+4.70
Beothuk A	+1.72	+2.86	+3.00
Beothuk B	+0.53	+1.79	+2.48
XIII-A-2	+0.09	0.00	−2.44

The *d* values are next squared, the totals being divided by *m*, the number of characters. This gives the mean square distance or C_H^2 , i.e.,

$$C_H^2 = (d_1^2 + d_2^2 + d_3^2 \dots d_m^2) / m$$

The shape distance is obtained by subtracting C_Q^2 from C_H^2 . If one assumes that there is a constant correlation between characters (and this is justifiable in the case of anthropometrical characters), C_H^2 is, in fact, a very close estimate of Mahalanobis's D^2 statistic. Penrose found a correlation between the two of 0.96 and 0.99 in two worked examples (Penrose 1954; Huizinga 1962).

The values obtained for mean square distance, size distance, and shape distance are listed in Table 3.

TABLE 3—Mean square distances, size distances, and shape distances of series and specimens from the Manuels River calvarium

Series or specimen	Mean square distance	Size distance	Shape distance
Manuels River	0.00	0.00	0.00
Labrador	2.20	0.02	2.18
Thule	1.34	0.53	0.81
Greenland	1.75	0.00*	1.75
Old Igloo	2.06	0.01	2.06
Iroquois	0.91	0.01	0.90
Sho-Sho	2.59	0.76	1.83
English	4.39	0.10	4.29
Scottish	2.00	0.03	1.97
Icelandic	8.14	0.66	7.47
Beothuk A	6.71	6.38	0.33
Beothuk B	1.99	2.56	0.65
XIII-A-2	3.21	0.61	1.37

*0.001

If the criterion chosen for discrimination is the mean square distance (i.e., an approximation to the D^2 statistic), it will be seen from Table 3 that the Iroquois sample is nearest in distance to the Manuels River calvarium. This might be interpreted as suggestive of the Indian affinities of the specimen rather than of Eskimo or European ones. There is no suggestion of resemblance to either of the Beothuk crania or to the other Newfoundland specimen. However it must be borne in mind that (a) size differences contribute far more substantially than shape differences to the mean square distance, and (b) the Newfoundland specimens are single crania only and not necessarily as typical of their group as the mean values are for the series used in the comparison.

When one comes to examine the size distances, it is immediately obvious that this is a criterion of little discriminatory value for the present purpose. The two Beothuk crania appear to be the most distant in size followed by the Sho-Sho, the Icelanders, the Newfoundland cranium, and the Thule Eskimos.

Looking at the shape distances, one sees that if the size distance component of the statistic is removed, there is an immediate association between the two Beothuk crania and the Manuels River calvarium. It is possible that this identification would be closer in terms of distance if the Beothuk values were based on the means of samples instead of on individual values. Also lying reasonably close in shape distance are the Thule Eskimo and the Iroquois. It must be remembered here again that $n = 10$ for the Thule sample. There is no suggestion of shape similarity to any other of the samples.

The questions that must be asked, but which cannot in the present study be answered, are whether the three metrical variates used are the most useful for purposes of discrimination, and whether a different picture of resemblances might be obtained by utilizing more characters or different characters. An estimation of the discriminatory value of the three characters can be obtained, however, from a perusal of an attempt at this kind of evaluation (Van Bork-Feltkamp 1950). The five most useful characters, in order of importance, for discriminating between cranial series are maximum breadth (B ; Martin 8), bi-zygomatic breadth (J ; Martin 45), maximum length (L ; Martin 1), upper facial height ($G'H$; Martin 48), and basi-bregmatic height (H' ; Martin 17). Thus three out of the five most discriminatory characters are used in the present inquiry. Again, a reassurance (although admittedly of an empirical kind) comes from a recent attempt to assess the morphological affinities of the ancient Etruscans by using the same three characters as are utilized in the present study (Barnicot and Brothwell 1959).

The possibility of better discrimination being obtained by entering more characters into the computation has more than once been discussed by Rao (1952) in connection with the value of the D^2 statistic. His conclusion maintains that no apparent benefit is derived from admitting more than half-a-dozen or so characters into the computation. The reason is, of course, that many anthropometric characters are highly correlated amongst themselves, and the transformation process to rid the characters of this correlation merely results in more characters of virtually equal discriminatory value being

created. Obviously, in the present inquiry a weakness in the construction of the distance statistic is that it contains no facial measurement of any kind. There is unfortunately no way of rectifying this.

The cautious suggestion may be made, therefore, than on the basis of this three-character distance statistic, and accepting the limitations of some of the samples, the Manuels River calvarium is more likely to be Indian than Eskimo and less likely to be European. Some resemblance in shape to authenticated Beothuk crania cannot be ignored, although it would be rash to assert closer affinities on a basis of comparison with two isolated specimens.

Support for the non-Eskimo affinities of the Manuels River remains is forthcoming from certain non-metrical morphological traits which, although occasionally somewhat suspect as subjective indicators, have proved to be of significant value in distinguishing between Indians and Eskimos (Oschinsky 1962, 1964; Laughlin and Taylor 1960). Thus the Manuels River calvarium has no trace of any sagittal keeling; the mandible has no mandibular torus and has a narrow ramus and a convex-straight inferior corpus surface. The second permanent mandibular molar is four-cuspid with a cruciate occlusal pattern; this is more common in Indians than in Eskimos where the 5-5-5 mandibular molar cusp pattern formula is prevalent. The mandibular incisurae are "sickle-shaped" rather than "scythe-shaped," to use Oschinsky's terminology (*op. cit. supra*), but they are shallow rather than deep, as is indicated by value of the biometric character *IH'*.

An overall distance statistic does not give any precise identification of the differences that enter into its computation. Absolute size differences, for example, may be positive or negative, but this will not be apparent from the distance values shown in Table 3. The untransformed means for the series and the individual values used in the comparison are accordingly listed in Table 4.

TABLE 4—Mean values and individual measurements for the series and specimens used in the metrical comparison*

Series or specimen	<i>L</i> (mm)	<i>s</i>	<i>B</i> (mm)	<i>s</i>	<i>H'</i> (mm)	<i>s</i>
Manuels River...	?171.0		135.0		135.0	
Labrador.....	179.6 (37)	4.99	129.1 (32)	4.14	129.0 (34)	4.60
Thule.....	181.8 (10)	—	135.1 (10)	—	135.7 (9)	—
Greenland.....	180.4 (52)	5.33	129.9 (52)	4.20	131.2 (52)	3.90
Old Igloo.....	180.8 (31)	5.80	127.9 (31)	4.45	133.4 (30)	3.90
Iroquois.....	178.8 (22)	—	132.3 (21)	—	133.0 (21)	—
Sho-Sho.....	174.0 (11)	—	133.0 (11)	—	124.0 (11)	—
English.....	181.6 (182)	—	135.7 (180)	—	122.5 (163)	—
Scottish.....	178.4 (47)	5.07	135.5 (47)	4.66	126.7 (47)	4.40
Icelandic.....	179.2 (49)	5.39	136.1 (44)	5.72	125.5 (49)	4.10
Beothuk A.....	180.3		147.3		147.3	
Beothuk.....	173.9		142.7		145.3	
XIII-A-2.....	171.5		135.0		?125.0	

*Values of *n*, where appropriate, appear within parentheses. Standard deviations, *s*, are shown where available for series.

From this table it will be seen that the Manuels River calvarium is small in length but more or less intermediate in width and height, within the chosen comparative context. It will be recalled that the distance statistic depreciated the importance of size in the discrimination. Therefore, to compute some of the conventional cranial indices in order to assess where, in terms of shape, the Manuels River calvarium may be said to differ from or resemble other series or specimens should prove enlightening. These indices appear in Table 5.

TABLE 5—*Comparative table of cranial indices*

Series or specimen	Indices		
	100 B/L	100 H'/L	100 B/H'
Manuels River.....	78.9	78.9	100.0
Labrador.....	72.2	71.9	100.1
Thule.....	74.3	74.9	100.1
Greenland.....	71.9	72.8	101.0
Old Igloo.....	70.7	73.8	104.2
Iroquois.....	74.0	74.3	100.5
Sho-Sho.....	76.4	71.2	107.2
English.....	74.8	67.9	110.6
Scottish.....	76.0	71.0	106.9
Icelandic.....	76.1	70.0	112.1
Beothuk A.....	81.6	81.6	100.0
Beothuk B.....	82.0	83.5	98.2
XIII-A-2.....	79.8	72.8	108.0

Figures 1, 2, and 3 show the scatter of the various samples when plotted according to various combinations of cranial indices. The two Beothuk crania, and to a lesser extent the Manuels River calvarium, are seen to stand somewhat in isolation in each case. It must be remembered, however, that many of the points denote the positions calculated on a basis of sample means; the probable distribution of the individual index values for the Iroquois has been shown as an example. The method adopted is an approximation, using 2 s as an indicator of the probable 95.0 per cent range of individual values. A more exact procedure would be to calculate the true probability ellipses, but in many cases the standard deviations of samples are unknown. Figures 2 and 3 demonstrate that it would not be impossible or even improbable to find an Iroquois female whose shape, as defined by the indices, was similar to that of the Manuels River calvarium. It is also obvious, incidentally, that there is little possibility of distinguishing between Eskimos and Indians on a basis of these indices. Making the hazardous assumption that the two authenticated Beothuk females are typical of their kind, it would appear possible to distinguish between Beothuk on the one hand, and non-Beothuk Indians and Eskimos on the other hand. Here, for the time being, the inquiry must rest, since there are as yet no comparative mandibular data to extend the metrical comparison, nor discriminant functions to distinguish between Eskimos and Indians.¹

¹These anthropometric lacunae are currently being filled as part of the program of work of the Physical Anthropology Section.

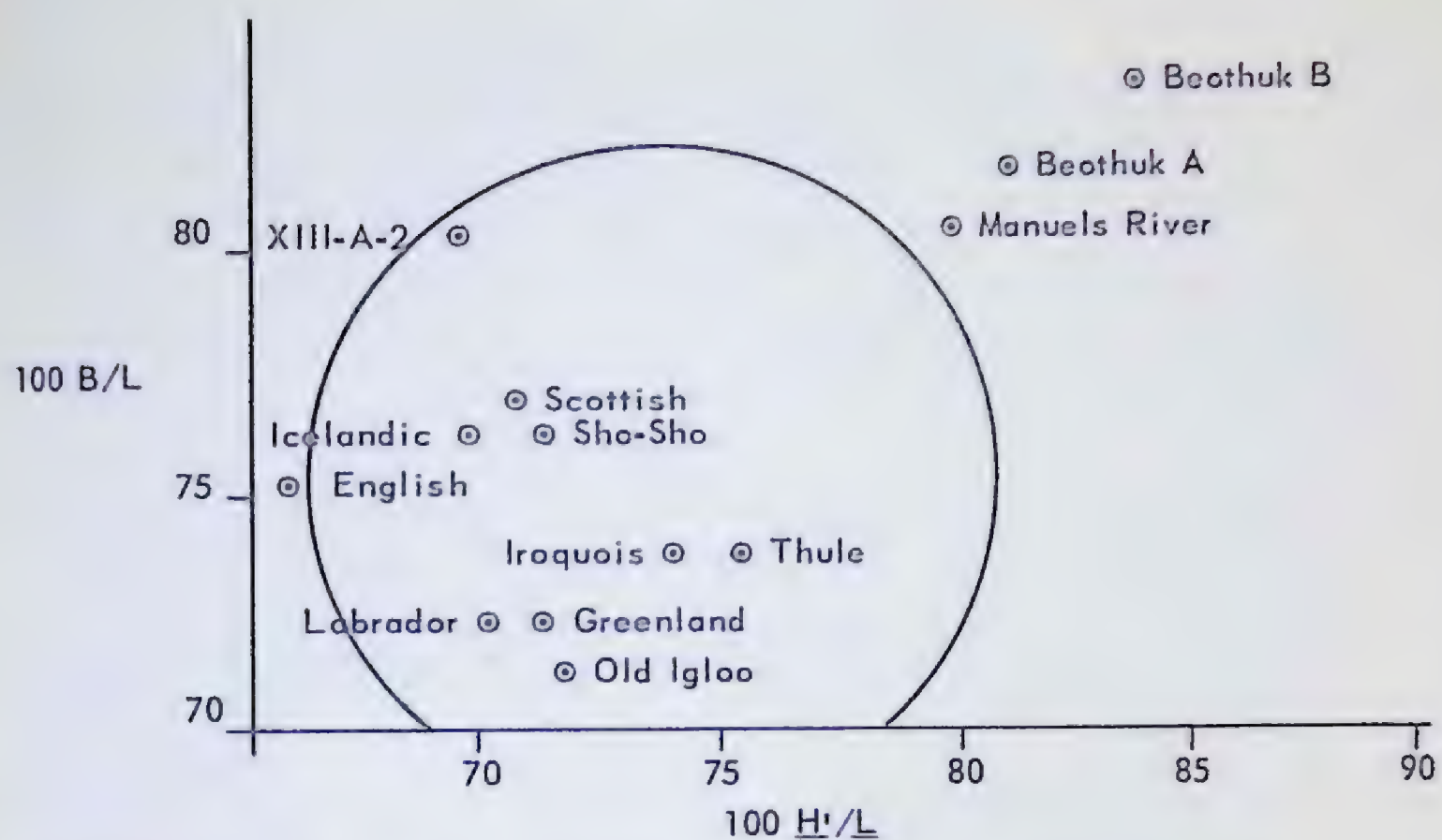


FIGURE 1—Graph plotted from cranial index and height-length index values. Circle with radius 2s (approx. 95.0 per cent of sample values) drawn with centre at Iroquois series.

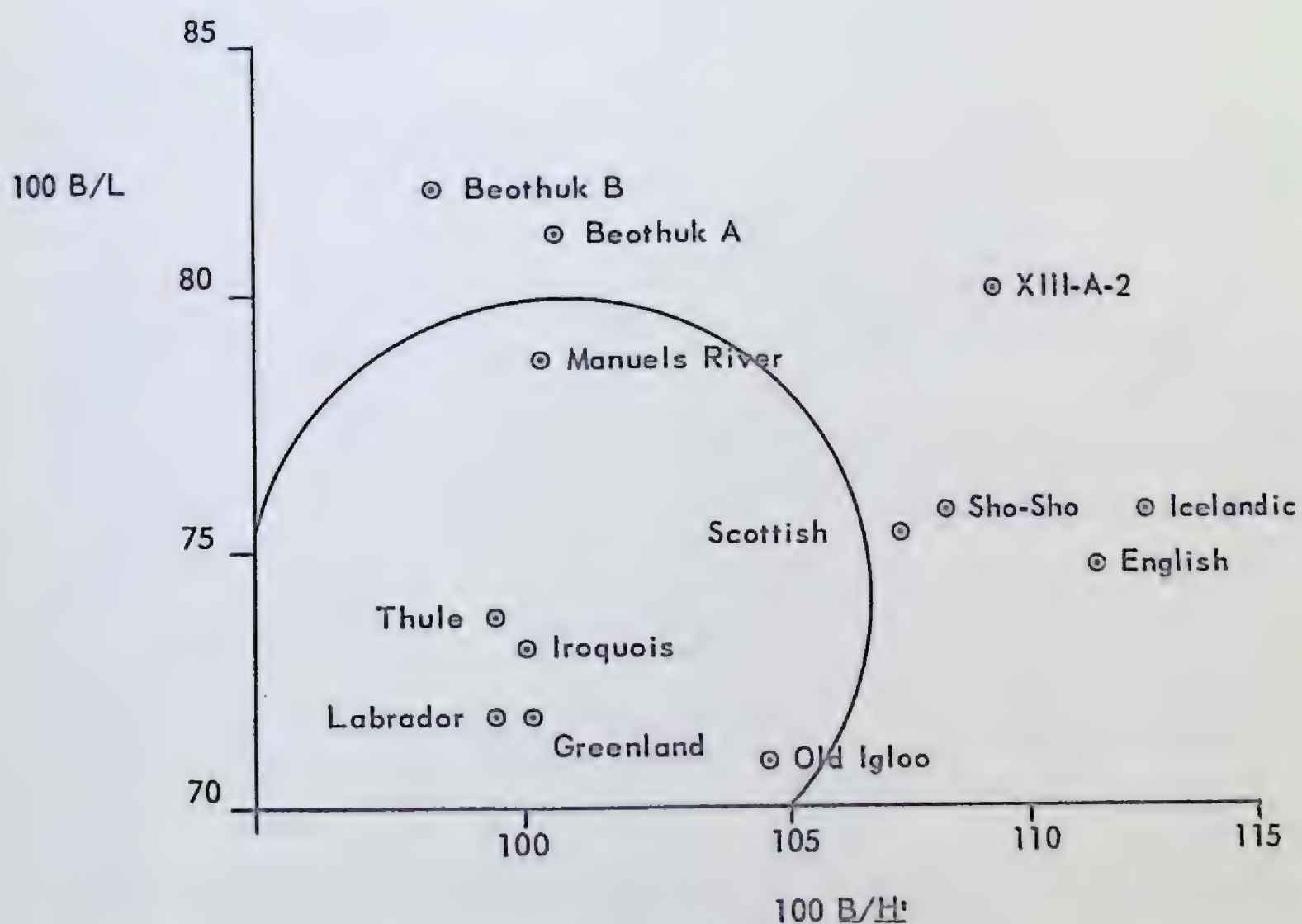


FIGURE 2—Graph plotted from cranial index and breadth-height index values. Circle with radius 2s (approx. 95.0 per cent of sample values) drawn with centre at Iroquois series.

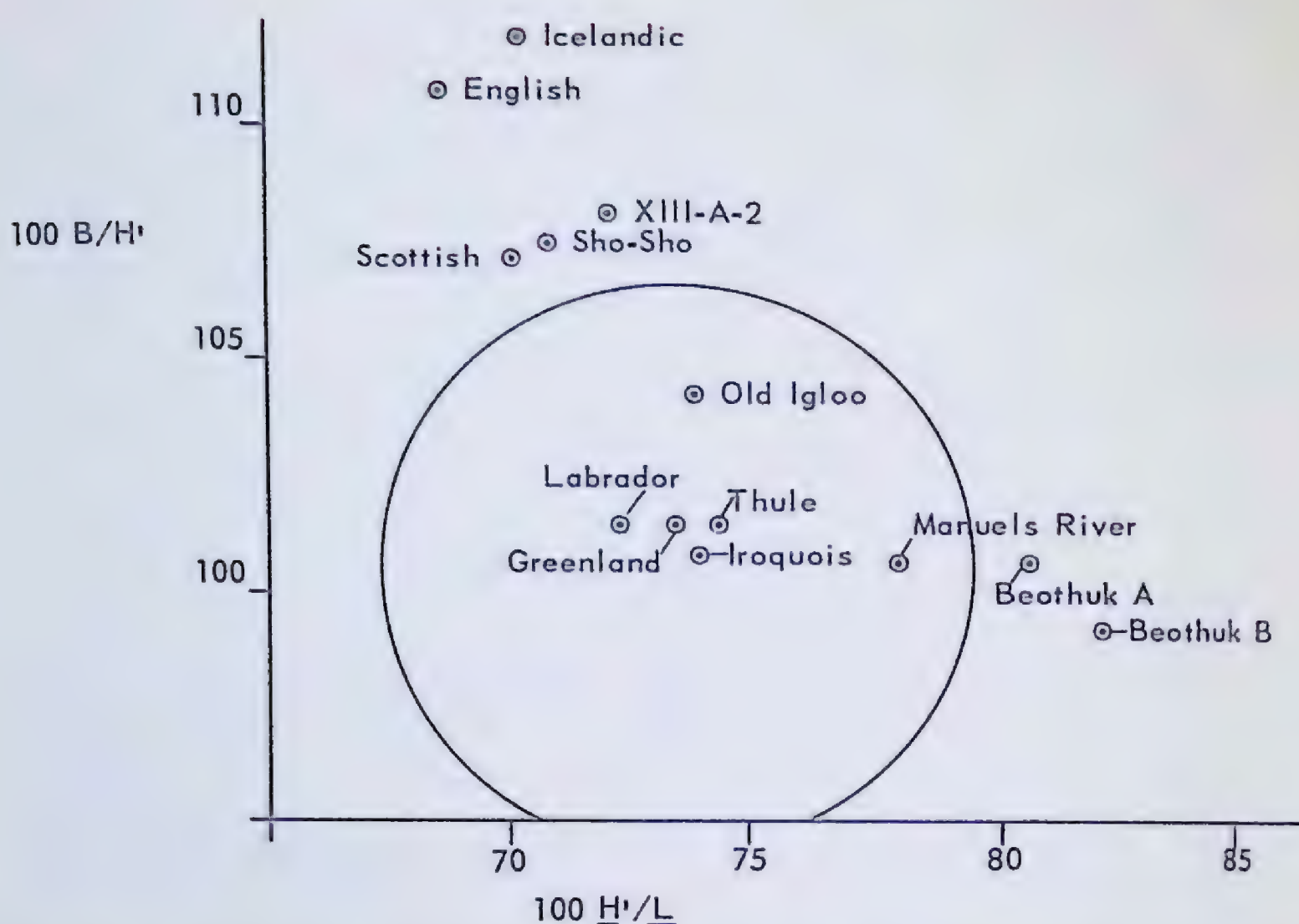


FIGURE 3—Graph plotted from breadth-height index and height-length index values. Circle with radius $2s$ (approx. 95.0 per cent of sample values) drawn with centre at Iroquois series.

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ARCHAEOLOGICAL SURVEY IN THE LOWER FRASER RIVER VALLEY, BRITISH COLUMBIA, 1963

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RÉSUMÉ

Le Musée national du Canada et l'Université de la Colombie-Britannique ont organisé, à l'été 1963, une expédition archéologique dans la vallée inférieure du Fraser. L'étude a porté sur les deux rives du fleuve et de ses tributaires, depuis Yale, où le Canyon se rétrécit, jusqu'au détroit de Georgie, mais s'est surtout concentrée sur la rive gauche moins accessible du fleuve, à peu près entre Yale et Chilliwack.

Les gisements découverts ou revisités datent probablement du postpléistocène inférieur jusqu'à la période historique. On a tenté de classer chronologiquement ces emplacements en se basant sur les résultats d'une récolte superficielle, élaboré plusieurs hypothèses de travail et fait plusieurs recommandations. (Voir page 231.)

On a étudié tout spécialement un groupe de stations comprenant surtout des burins de pierre enfouis dans un sol rougeâtre caractéristique, de 40 à 100 pieds au-dessus du niveau actuel du fleuve. Il se peut que des conditions physiographiques ou climatiques très différentes de celles d'aujourd'hui aient existé autrefois en cette région. On a aussi tenté de découvrir des stations de transition entre les divers âges connus et contenant des éléments intermédiaires entre les éléments connus du Canyon et les plus anciens éléments du Delta, typiques de la côte nord-ouest (par ex. Marpole). On a fouillé des emplacements semblables à la station Marpole et découvert des preuves de l'existence d'une plus ancienne tradition de pointes emmanchées. On s'est enfin intéressé à de nombreux complexes de stations récentes présentant des caractères de la culture plus récente des Indiens Stalo.

Le présent rapport tente de déterminer les relations possibles entre la culture et le milieu donné. Les recommandations font ressortir la nécessité d'une étude régionale, entreprise simultanément par des spécialistes des diverses disciplines intéressées, pour mener à bien cette étude de la préhistoire du cours inférieur du Fraser.

SUMMARY

During the summer of 1963, an archaeological survey of the lower Fraser River Valley was sponsored by the National Museum of Canada and the University of British Columbia. Although the survey area included both banks of the Fraser and tributaries from the narrowing of the Canyon at Yale to the Strait of Georgia, investigation

was concentrated on the less accessible left bank, approximately between Yale and Chilliwack.

Sites discovered or re-examined probably range in time from the early post-Pleistocene to the historic period. An effort was made to organize these sites chronologically on the basis of surface collections obtained or examined. Several hypotheses and concrete recommendations for further research are proposed (*see* p. 231).

Particular attention was given to a group of sites consisting primarily of crude cobble choppers imbedded in characteristic reddish soils located 40 to 100 feet above the present river level. These sites may have been associated with physiographic or climatic conditions differing substantially from those of the present. In addition, an attempt was made to locate sites of intermediate age and of a transitional character between the known components of the Canyon and the earliest Delta components of Northwest Coast character, such as Marpole. Several sites comparable to Marpole were examined, and manifestations of a large stemmed point tradition that may be earlier in time were studied. Finally, several complexes of late sites, suggesting the culture of the recent Stalo Indians, were investigated.

An attempt is made in this report to suggest possible relationships between the cultural and environmental features within the given area. Recommendations emphasize the desirability of a regional and interdisciplinary approach to the prehistory of the lower Fraser River.

Introduction

Between June 17 and September 17, 1963, an archaeological site survey of the lower Fraser River, British Columbia, was conducted under the sponsorship of the National Museum of Canada. The project was under the general supervision of Dr. Charles E. Borden, University of British Columbia, Vancouver, and under the field direction of R. S. Kidd. Assistance was rendered by David Keenlyside between June 20 and July 4 and by Derek Smith for the remainder of the season. Derek Smith also cooperated in the production of the report. Dr. David Sanger, then of the University of Washington, Seattle, assisted by the preparation of photographs. Dr. William E. Taylor, Jr., of the National Museum of Canada, read the manuscript and offered valuable criticism. I should like to thank each of the above, as well as the many other individuals who facilitated work in both the field and the laboratory.

SCOPE AND OBJECTIVES OF THE LOWER FRASER PROJECT

The lower Fraser Survey was undertaken with two general and several specific objectives. The general aims were as follows: (1) to discover archaeological sites within the survey area before they were destroyed by the expansion of housing and industry; and (2) to investigate reports that had come to the Laboratory of Archaeology at the University of British Columbia in response to an announcement in local newspapers of the National Museum

Project. The specific objectives were as follows: (a) to discover archaeological sites that might come between the early occupations at site DjRi 3 in the Fraser Canyon (dated by carbon 14 from approximately 9,000 to 7,000 years before present) and the earliest excavated components in the Delta region (with a maximum date of 943 B.C.) (Borden 1962, p. 12). Subsequent discoveries at site DjRi 5, particularly the Eayem phase, have partially filled this gap (Borden 1965, p. 3, Fig. 3; and pers. comm.); (b) to locate new sites in the Fraser Valley between the Canyon and the Coast. This region was partially explored by Walter Kenyon on a survey in 1952-3; his work was handicapped, however, by a general lack of data on early cultural manifestations in the Pacific Northwest. The subsequent excavations of DjRi 3, in the Fraser Canyon, and Five-Mile Locks, at The Dalles of the Columbia, together with the discovery of apparently similar complexes in Washington State, have to some extent supplied these data. The present evidence for a sloping time horizon from Interior to Coast on the Fraser River, as well as the persistence of several unresolved hypotheses of riverine to maritime development in western America (Kroeber 1939, p. 28; Osborne 1958, p. 51; Cressman and others 1960, p. 71, 73), seemed to demand an approach to the spatial lacuna noted above that included a continued awareness of the time factor; and (c) to obtain samples for carbon 14 testing.

At the beginning of the summer, a letter was received from Dr. W. E. Taylor, Jr., announcing the National Museum's radiocarbon dating project. It was felt that the actual collection of carbon samples should be accompanied by test excavations to provide context. But it was recommended that samples be left in situ until more time and more specialized equipment could be used.

WORKING HYPOTHESES

In undertaking site survey in the Lower Fraser, I was anxious to test hypotheses formulated or adopted during several years' work on the prehistory of western Washington State. During the 1963 season, these hypotheses were re-focused through conversations with Dr. C. E. Borden, Dr. W. H. Mathews, Dr. Wayne Suttles, and Derek Smith, all of the University of British Columbia at that time.

(1) The investigation of sites in the Stillaguamish and Pilchuck drainages of western Washington State suggested that a correlation might exist between early archaeological complexes and upland soils of the Lynden or similar series. Such a correlation, if substantiated by further investigation, might be expected not only to facilitate the discovery of early sites but also to generate or support hypotheses concerning the relationship between cultural and environmental factors.

(2) Application of recent work on the late Pleistocene and early post-Pleistocene by Heusser (1960), Fairbridge (1958, 1960), Shepard (1963), Easterbrook (1963), Armstrong (1960, 1961), and others indicated the possible importance of changes in the relationship of land and sea during the earlier periods of northwestern prehistory. That is, sites might be expected to occur some distance from present waterways, in association with old river terraces or high river or sea beaches.

(3) The results of work on Whidbey Island, Washington, by Dr. Alan Bryan (1963) and my own subsequent observations in western Washington and southern Vancouver Island suggested a correlation between a form of large contracting-stemmed basalt projectile point and natural prairie localities that afforded some indication of considerable antiquity. Comparable points appeared neither with the earliest materials in the Fraser Canyon (Borden 1962, p. 10, pl. 1) nor in most of the shell mounds of the Delta, although one or two examples may have occurred at the Marpole site. This association might imply a relationship between temporal stages of forestation and particular cultural developments.

PROCEDURES OF SITE SURVEY

Several limiting factors were recognized at the outset of the survey. The first of these was the magnitude of the area (totalling approximately 105 miles of river) to be examined in a single season. The second was the character of the river—the numerous braided channels, sloughs, lakes, and tributaries such as the Harrison, Stave, and Pitt systems. A number of these tributaries or neighbouring watercourses, such as the Serpentine–Nicomekl and the Sumas rivers, were probably occupied during the late Pleistocene or early post-Pleistocene by the Fraser River or by arms of the sea; consequently, evidence of early habitation might exist.

The third and fourth limitations were the dense vegetal cover in portions of the survey area and the fairly intensive settlement of the lower valley. As a consequence of these four factors, spot-checks of available exposures and consultation with local informants were generally more practical than systematic examination of all waterways and land surfaces in a region.

We obtained maps of the National Topographic Series in several scales. For Rosedale to the Strait of Georgia a scale of 1:25,000 was available, providing excellent detail and a contour interval ranging between 5 and 50 feet. From Hope to Spuzzum a scale of 1:50,000, with 100-foot contour interval, and from Hope to Rosedale a scale of 1:126,720, with 100-foot contour interval, permitted much less accuracy in plotting. Maps of surficial geological deposits from the recent delta to Chilliwack were available (Armstrong 1956, 1957, 1960), as well as soil survey maps from the Strait to Seabird Island (Kelley and Spilsbury 1939). Finally, a series of B.C. Government air photos of the Fraser from the Strait as far upriver as Squeah Station was on file at the Laboratory of Archaeology, University of British Columbia.

We located discovered sites by plotting on maps and by using descriptions of pertinent landmarks, distances usually being estimated by pacing or speedometer. Directions are approximate. Site letters and numbers were assigned according to the Uniform Site Designation Scheme suggested by Borden (1952), with site and artifact numbers continued from those already on file at the University of British Columbia. Most of the important sites were photographed in 35 millimetre black and white.

With the emphasis on determining location and character of sites, we tried to obtain substantial surface collections or to examine private artifact collections whenever these were available.

We began site survey on foot on the left bank of the Fraser, approximately opposite Sawmill Creek which represented the upriver limit of historic Stalo (Coast Salish) territory. We continued downriver as far as Squeah (Suka) Creek, generally along the C.N.R. tracks. During this initial phase of the project, we established camp, first at site DjRi 3 and subsequently at South Yale.

To facilitate survey of the left bank of the Fraser between Hope and Squeah, we moved to the Coquihalla Campground at Hope. From there we also spent several days spot-checking the right bank between Yale and Hope. Sites on this side of the river were accessible by road and had been investigated in 1956 by Dr. C. E. Borden and James Baldwin. Therefore, our efforts were directed to locating additional early sites comparable to DjRi 7 or DjRi 3 (Borden 1962; Mitchell 1965). A similar procedure was followed between Hope and Rosedale, where a survey had been conducted in 1949-50 by Wilson Duff. Consequently several recent housepit sites known to exist in this region were not revisited.

After the completion of site survey upriver from Hope, we established camps in the Chilliwack region, first at Cultus Lake and later on the property of Mr. Carl Wilson at Vedder Crossing. We are particularly grateful to Mr. and Mrs. Wilson for their kindness and continuing encouragement. From Chilliwack, survey by vehicle was extended downriver as far as Whonock, again with concentration on the discovery of earlier sites. Some attention, however, was given to recording a probably relatively late complex of sites near Mount Shannon, Chilliwack. Investigations in the vicinity of Chilliwack were greatly aided by Mr. Oliver Wells, Mr. Vic Clarke, and a number of other residents.

Finally, from a base in Vancouver we conducted a few days of survey primarily in the regions of Fort Langley and Pitt Meadows.

In summary, the large area to be covered in a limited time demanded a selective approach. This resulted in a general delineation of the archaeological resources of the lower Fraser area and also pointed to specific regions where subsequent work might be concentrated (*see Recommendations*).

GEOGRAPHY AND GEOLOGY

As defined for the purpose of the survey, the lower Fraser includes all the Fraser lowland and a portion of the Canyon from approximately 5 miles upstream from Yale to the vicinity of Agassiz. The Fraser lowland stretches from Agassiz to the Strait of Georgia, a distance of more than 65 miles, and culminates in the recent Delta, which is approximately 19 miles long by 15 miles wide. It is bounded on the north by the Coast Mountains and on the southeast by the Cascades. A few Cascade outliers, such as Sumas Mountain and Mount Vedder, occur in the vicinity of Chilliwack. The Fraser lowland consists of hills or uplands formed of unconsolidated glacial deposits, separated by broad, flat-bottomed valleys. The uplands range in area from 1 square mile to 150 square miles and in elevation from 50 to 1,100 feet above sea-level, with an average elevation of less than 500 feet (adapted from Armstrong 1961, p. 22-3, 1960, p. 3-4; Kelley and Spilsbury 1939, p. 8; Forest Soils Committee 1957, II, p. 3, Johnston 1923, p. 6-7).

The present climate of the Fraser Valley is characterized by mild and relatively uniform temperatures and a fairly heavy rainfall (approximately 60 inches in the western lowland), with a marked winter maximum. Regional variation is extreme, however, particularly as a factor of elevation and of proximity to the mountains. In nearby western Washington, the Gulf Islands, and Vancouver Island this variation is at least partially responsible for strikingly abrupt changes in vegetation, which may have been reflected in significant changes in habitation patterns or forms of aboriginal land utilization (adapted from Kelley and Spilsbury 1939, p. 9-13; Dice 1943, p. 32; Forest Soils Committee 1957, IV, p. 1-3, Fig. IV-1).

The vegetation of the lower Fraser is characterized by Dice (1943, p. 31-4) in his description of the Oregonian biotic province. According to Heusser (1960, p. 35, 60), the lower Fraser Valley lies mostly within the western hemlock-western red cedar climax region of the Pacific Coastal Forest. Principal conifers are *Pseudotsuga taxifolia* (Douglas fir), *Thuja plicata* (western red cedar), *Tsuga heterophylla* (western hemlock), and *Abies grandis* and *Abies amabilis* (fir). Kroeber (1939, p. 28, 204-6) long ago noted the concordance of the vegetational-climatic area of the Northwestern Hygrophytic Coniferous Forest with the culture area of the Northwest Coast. Recently, Suttles and Elmendorf (1962, p. 48) have suggested a further partial concordance between the Douglas fir sub-climax forest and the historic distribution of the Salish language.

The geological history of the late Pleistocene and early post-Pleistocene is of particular importance with regard to earlier archaeological remains from the Fraser Valley. Armstrong (1960, p. 12-13; 1961, p. 24) suggested that the Vashon Glacial Stade, which lasted perhaps from 25,000 to 12,000 years before present, was accompanied by a depression of the land of as much as 1,000 feet. Following ice retreat, the land emerged at least 600 feet to within approximately 100 feet of its present elevation. A valley glacier, the Sumas, which may have existed between 11,500 and 9,500 years ago, advanced west (largely in the form of a floating ice sheet) to within 25 miles east of Vancouver and southwest as far as Bellingham (Armstrong 1960, p. 12-13; 1961, p. 24, 27-8; and pers. comm.; Easterbrook 1963). Submergence of the land during this advance, possibly owing in part to eustasy, reached at least 500 feet above present sea-level (Armstrong 1961, p. 24; Easterbrook 1963, p. 1469, 1479, 1482). Following this last glacial stage, the area now constituting the Fraser Delta may have been occupied by a deep fjord. During the pre-Sumas interval, drainage of the Fraser might have been to the southwest of its present channel, through the Sumas Valley (Armstrong 1960, p. 13). Southwest of the bed of Lake Sumas, and at elevations ranging from 100 to about 200 feet above sea-level, lies an extensive outwash plain capped by Lynden loam. This soil type extends even farther to the west along channels once occupied by glacial meltwaters (Kelley and Spilsbury 1939, maps; Mathews, pers. comm.).

Emergence of the land following the Vashon Stade seems to have taken place at a comparatively rapid rate (Johnston 1923, p. 53; Easterbrook 1963, p. 1480; Heusser 1960, p. 191-4). During stages of uplift, successive marine deltas were formed, and these deltas may have been occupied by

early man. An extensive marine delta lies approximately 100 feet above sea-level and 4 miles inland between the Nicomekl and Campbell rivers (Mathews, pers. comm.), and other examples occur elsewhere in the Fraser system (Forest Soils Committee 1957, II, p. 9). Having begun perhaps more than 7,300 years ago, when isostatic rebound seems to have been essentially completed, and when alluvium had apparently built westward as far as Port Mann, this process of land building climaxed in the formation of the recent Delta (Mathews and Shepard 1962, p. 1432-3).

The distribution of soils in the lower Fraser region would probably show a relatively high correlation with the distribution of surficial deposits of glacial origin (Armstrong 1961, p. 30) and with even more fundamental aspects of the geology (Forest Soils Committee 1957, II, p. 5). Again, a concordance between soils and vegetation, and perhaps between soils and the nature of the cultural evidence, is suggested. Most important in this last regard is the distribution of reddish brown concretion-bearing soils, probably of the Red Brown Podsollic or Podsol groups (*ibid.*, III, p. 14, Fig. III-3). Mapped as Lynden loams, these occupy some upland terraces or flats within the survey area. They are frequently associated with outwash plains and are underlain by stratified sands or gravels (Kelley and Spillsbury 1939, p. 24-8). Other soil types that may be of significance in the archaeology of this area are the Langley and Monroe clay loams, which are associated with low elevations, sometimes with abandoned Fraser River channels, and in some instances with natural, often poorly drained meadows or prairies. These soils are particularly developed in the vicinities of Langley and Chilliwack, where several archaeological sites that may be of intermediate age have been recorded (*ibid.*, p. 38-9, 44-9; Mathews, pers. comm.).

ETHNOGRAPHY

The 1963 survey was conducted entirely within the territory claimed by the 'Stalo' (river) division of the Coast Salish Indians, a 105-mile section along the Fraser River from its mouth to approximately 5 miles above Yale. Cultural contact occurred more readily throughout this area, because of the navigability of the river, than between the Tait group of the Coast Salish and the lower Thompson, which were separated by well-defined physiographic barriers (Duff 1952, p. 11-12, 14, 16, 19).

The territory of Tait, the uppermost Stalo group, was of particular economic significance. It stretches from Five-Mile Creek approximately to Popkum, but it is most clearly defined in the upriver part, which includes the fishing rocks of the Canyon (*ibid.*, p. 14-19). The importance of the Canyon above Yale is attested by archaeological as well as ethnographical evidence. Tribes from as far away as Nanaimo and the Saanich Peninsula frequented these fishing rocks during the summer, greatly swelling the ranks of the year-round residents of the Canyon (*ibid.*, p. 25-6). In part, the extensive movements of people through this area may have been the result of changing patterns of aboriginal life. Suttles (1955, p. 13) suggested that a decline in population because of epidemic disease, beginning about 1780, may have permitted not only territorial expansion by some groups but also

expansion of seasonal movements. Some time after the establishment of Fort Yale in 1848, the large canyon villages were probably abandoned in winter. Later, when Reserves were set up, there seems to have been a fairly general downstream movement in search of more desirable agricultural lands (Duff 1952, p. 41).

The Fraser River was the major travel axis of Stalo territory, but several minor axes were also important, such as the Salmon River – Nicomekl route from Fort Langley to Mud Bay, the Nooksack – Sumas route (*ibid.*, p. 16-17), and perhaps a trail via Pitt Lake between the territory of the Douglas Lillooet and the Fraser River (Suttles 1955, p. 13).

The Stalo were bound together by the *helk'ume'ləm* language, by kinship, and by basic economy. However differentiation occurred throughout their territory, especially in the vicinity of Chilliwack (Duff 1952, p. 11-12), primarily in linguistic details. This last observation led Duff to distinguish the Tait, Pilalt, and Chilliwack as "Upper Stalo." The Pilalt occupied the Agassiz valley and the complex of sloughs and channels to the east of Chilliwack (*ibid.*, p. 21). According to Stalo history, the villages of the Chilliwack River were once confined largely to the area above Vedder Crossing. Changes in the course of the stream, and perhaps the establishment of Fort Langley, occasioned movements in the direction of the Fraser (*ibid.*, p. 21, 43-4). Even today, the pattern of reservations (as of archaeological sites) in the Chilliwack region strongly suggests an orientation to the tributaries of the Fraser River rather than to the river itself.

Of the Lower Stalo groups, the Scowlitz occupied Harrison Bay and the mouth of the Harrison River (*ibid.*, p. 21), and the Nicomen occupied most of Nicomen Island and the adjacent mainland to the north. According to Duff (*ibid.*, p. 22-3), the most westerly Stalo housepit village was in this area. Still farther to the west were the Sumas, Matsqui, Hatzic, Whonock, Kwantlen, Katzie, and finally the Musqueam people of the recent Delta in the vicinity of Vancouver (*ibid.*, p. 23-4, Map 1).

The dominant element in the economy of all the Stalo was fish, particularly the five species of salmon (*Oncorhynchus*) that enter the Fraser. Most important of these were the spring and sockeye, which reached their peak in August and September. The fish were caught with the dip-net, weir, or harpoon (*ibid.*, p. 62-3, 67), but now gill-nets on poles are used. Game was a secondary food source, particularly bear and mountain goat among the Upper Stalo, and roots and berries were fairly important elements in the diet (*ibid.*, p. 71-4).

Especially among the Tait, territory was loosely defined, emphasis being placed on the family ownership of dip-netting stations (*ibid.*, p. 77). The extended family was the most important economic and social unit, enjoying a large measure of mobility within the small village unit (*ibid.*, p. 84-5). Villages themselves, with the exception of some such as those at Yale, Hope, and Langley, were characterized by instability and population fluidity, with the result that "nearly all favourable sites have been occupied at one time or another" (*ibid.*, p. 85). Throughout the area of the Stalo, 'tribal' units were difficult to define and not very important as social or political entities (*ibid.*, p. 86-7).

ARCHAEOLOGICAL SITES INVESTIGATED

For the purpose of the following summary, 12 sites were selected from the total of 69 discovered or revisited during the survey. The selected sites provided either surface indications or a collection of specimens sufficient to suggest their relative ages, and would probably repay excavation. The resulting very tentative sequence cuts across spatial divisions that may be equally important to the temporal distinctions emphasized. (For locations of sites see Map, Figure 1.)

Classification of specimens is provisional; it is intended to convey only an approximate idea of the material culture of the represented sites and to permit their comparison. None of the collections has been fully analysed. Raw materials, unless otherwise specified, are generally argillite or basalt. In the absence of measurements, terms such as 'large' and 'small' are arbitrary; the former denotes in general a specimen about fist size, the latter a specimen distinctly smaller and probably hafted for use.

Site DiRi 22

Site DiRi 22 is located on the right bank of the Fraser on a terrace approximately 40 feet above the river at the base of a low hill that lies about one-fifth mile south of American Creek. Cobble choppers were scattered over a bulldozed area of fine, yellow-brown, silty sand, extending 200 yards along the river and 20 yards or more inland. Although badly disturbed at the time of our investigations, the site had evidently been covered with deciduous and coniferous trees. Specimens occurred probably close to the original surface of the ground, concentrated at the base of the hill on the north. Some traces of occupation were noted on the higher flat to the west (approximately 100 feet above the river). Logging was still in progress at this site, and it may have destroyed the few remaining deposits that might have been excavated.

Specimens recovered from DiRi 22 consist entirely of heavy chipped stone tools, perhaps comparable to the Pasika unifacial chopper complex from DjRi 7, South Yale (Borden 1965, p. 5, 7, 9, Fig. 3; Mitchell 1965). Apart from a single small core from which several blade-like flakes appear to have been derived, there is no suggestion of a small implement industry. The site is characterized by a series of 10 cobble choppers (comparable to the end variety IA from Hills Bar) that have been brought to a point. In addition, there are 6 plain end-choppers (IA), 6 choppers worked along the long side (IB), and 6 choppers worked diagonally to the major axis (IC). Three split cobbles are flaked along the long side and at the end; 2 generally similar examples are backed by a fracture at right angles to the plane of the flake; and 2 large specimens are irregular or fragmentary. Other unifacial tools include 2 thick, oval, cortex-based flakes peripherally chipped for three-quarters and all of their circumferences respectively; 1 rectangular nucleus steeply flaked to a dome; 4 rough side-scrapers made on large flakes; and 1 scraper with the outline approximating an elongated triangle, flaked on the two longer sides. Two bifacial specimens occur in the assemblage: one of these is a small, very irregular ovate; the other is a thick, bifacially retouched flake.

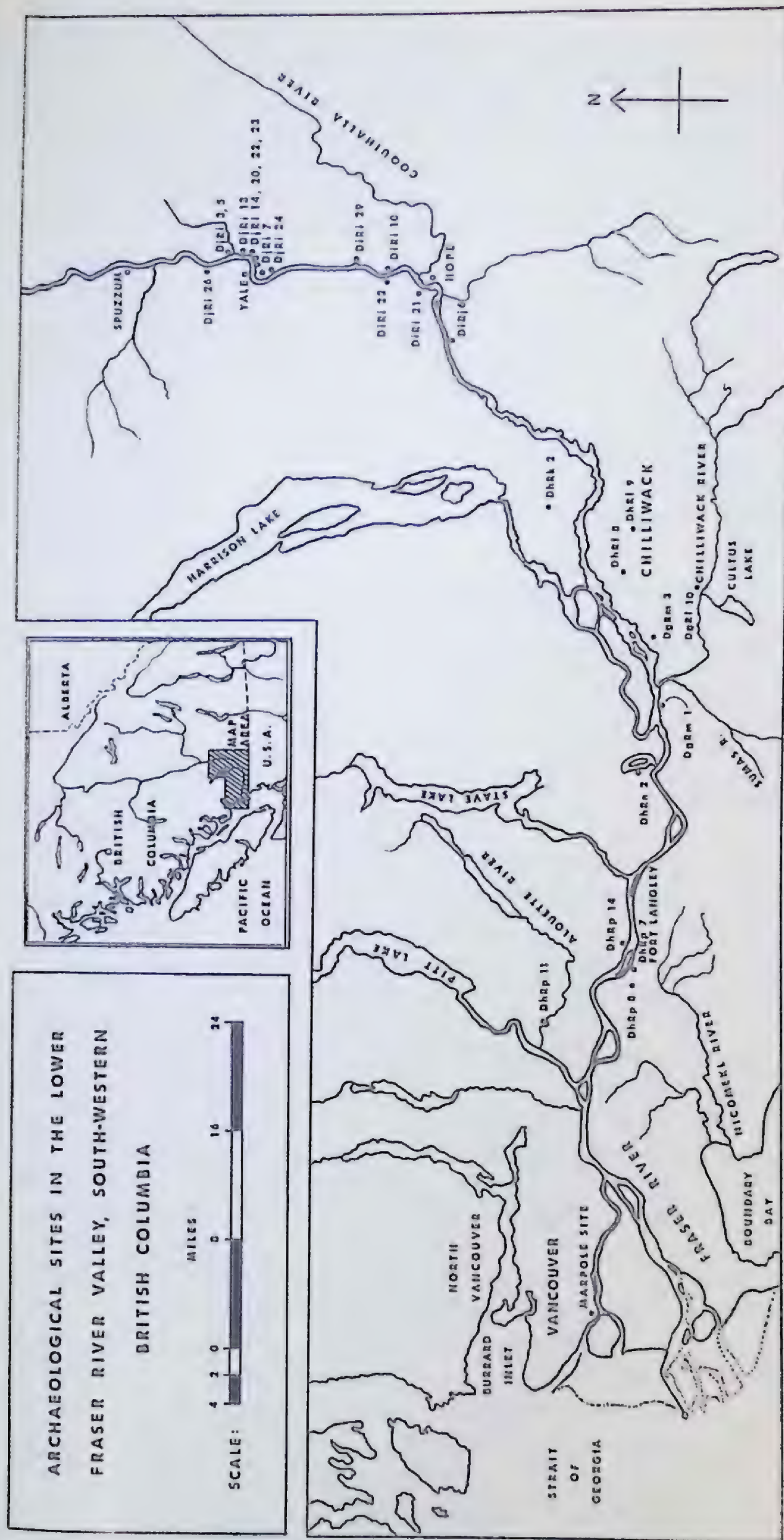


FIGURE 1—Map of the lower Fraser River valley, showing archaeological sites referred to in text. Sites indicated constitute approximately one-third of the total number examined during the survey.

Specimens exhibiting striking, but no purposive retouch, include 10 rough nuclei (cores or hammers), 5 cobble spall tools, 2 used flakes, and a quantity of chipping detritus.

In terms of both the character and the association of implements, site DiRi 22 typifies a number of localities where apparently early, sometimes non-projectile point or biface assemblages were found in reddish brown concretion-bearing soils. Important distinctions may be drawn between various of these assemblages, but such distinctions are not attempted at this time. Sites of this general type were found throughout the survey area between Sawmill Creek (DjRi 26) and Agassiz (DhRk 2), situated usually between 40 and 100 feet above present river level. In the Fraser Canyon these elevations would correspond very generally to that of the lowest terrace at site DjRi 7, South Yale, which is approximately 200 feet above present sea-level (Borden 1965, p. 3; Mitchell 1965). In two sites, DiRi 21 (Haig) and DhRk 2 (the McCallum site, Agassiz), artifacts were found on top of what appear to be ancient deltas or alluvial fans, possibly of early post-glacial origin.

DjRi 24 — The Hills Bar Site

Hills Bar, located approximately half a mile downstream from the South Yale railway station, was a gold-rush camp in the middle 1800's and still supported a small community in the later 1800's (Milliken, pers. comm.). Traces of mining activities remain in the form of rock-lined house foundations, in dumps of metal and glass, in piles of cobble placer tailings, and in vertical shafts in the sands of the bar. In addition, there is evidence of long and intensive aboriginal use. Diversified cultural materials were observed and collected along 720 yards of Fraser River beach and to a maximum distance of 200 yards inland. For purposes of recording, four 'terraces' were distinguished, although in its original condition the site may have consisted rather of a gradually sloping hill from east of the C.N.R. tracks to the beach. The uppermost terrace (4) lies approximately 70 feet above the river; it might at one time have been continuous with the southern end of DjRi 7. Chipping detritus was found in reddish brown sandy silt to a depth of approximately 9 inches. Terraces 1 and 2 may have been artificially created for historic structures. On Terrace 2 chipping detritus was found to a maximum depth of 14 inches, in earth that may have been derived from upslope. On Terrace 1, the first above the beach, heavy green bottle glass was stratified beneath a thick white silt that might be attributed to the flood of 1894. Although both the eastern and western portions of the site have been seriously damaged, undisturbed fill may have been preserved in intervening localities.

A large number of artifacts were recovered from the beach and the disturbed portions of DjRi 24. Chipped stone specimens have been sorted as a basis for classification of materials from other sites.

Projectile points, chiefly of basalt, include the following: 2 large side-notched specimens, one fragmentary (Plate I, figs. A and B), similar to points found at the Byrnes site, DhRp 14; 1 broad triangular basally- to corner-notched point (Plate I, fig. G); 1 medium-sized point with slight shoulders and contracting stem (Plate I, fig. C); 1 point with sharp shoulders and

rectangular stem (Plate I, fig. D); and 1 small side-notched point fragment (Plate I, fig. H). One large, percussion-flaked bipointed knife, made of weathered argillite (Plate I, fig. F), the fragment of a second example of apparently similar form (Plate I, fig. M), and a large side-notched specimen that may have been a knife (Plate I, fig. E) were also recovered. Fragments further include the base of a large single-shouldered point (Plate I, fig. L) and 3 point or knife tips (Plate I, figs. I-K).

Large choppers and scrapers were classified according to the extent of reduction of the cobble and the location of worked edges. This procedure did not take into primary account the angle of flaking, which may be important. Thirty-five specimens retain half or more of the original cortex on the worked face of the cobble; they were made by flaking one side of one face by percussion. Of these, 13 (IA) are edged on the short side or end of an oval cobble; 17 (IB) on the long side of an oval cobble; and 5 (IC) diagonally to the major axis of an oval to rectangular cobble. Of the second group, 5 specimens have been flaked around the ends to produce a curving to almost pointed edge.

Thirteen specimens (II) are made on cobbles with cortex removed from one face and with subsequent percussion flaking on this inner face. Although most specimens of Group I are approximately fist size, some of Group II are smaller. Three specimens (IIA) are edged along the short side of the split cobble, 10 (IIB) along the long side.

Twenty specimens (III) might be called scraper planes or discoidal scrapers. They are approximately oval to rectangular in outline, with flaking extending around a large proportion of the perimeter. These differ from examples of the preceding category in the greater amount of peripheral flaking and in the generally steeper edge. Four small specimens (IIIA) are flaked all the way around the perimeter, have a curving cortex base, and are domed; 2 large specimens (IIIB) are relatively flat and thin and are flaked all the way around the perimeter; 2 large specimens (IIIC) are flaked for three-quarters of the perimeter and have a curving cortex base; and 12 specimens (IIID), ranging widely in size, are steeply flaked for two-thirds to three-quarters of the perimeter, have flat to slightly curving bases, and have a tendency to angular outline.

Thirteen unifacial, peripherally flaked cobble spalls (IV) differ from specimens of Group III in having a pronouncedly elongated oval to rectangular outline. Of this group, 6 specimens have a steep edge and 7 specimens are relatively flat with a low angle of flaking. Bases may be flat or curving.

Tools within the unifacial category further include 7 small side-scrapers, formed on irregular flakes of jasper, chert, and basalt (Plate II, figs. B and G); a steep end-and-side scraper (Plate II, fig. D); 5 end-and-side or pointed scrapers (Plate II, fig. C); an oval specimen, perhaps a side-scraper, which narrows at one end to a steep scraping edge (Plate II, fig. F); and 23 larger, irregular (mostly side) scrapers (Plate II, fig. A). Thirteen additional specimens of scrapers or choppers are considered too irregular for classification.

Two possible unretouched microblades were found (Plate II, fig. H), along with one broad, short blade, retouched to form a scraper (Plate II, fig. E).

A number of specimens exhibit no purposeful flaking, but there are various indications of use: 5 elongated cobble hammerstones, battered on the ends; 11 cobble-spall scrapers or knives, round or oval in form, most of them with cortex on one face; 15 irregular used flakes; and 27 cores or irregular percussion-flaked nodules (at least 3 or 4 of which may be cobble hammerstones). A quantity of chipping detritus was recovered on the site.

Bifacial tools other than points or pointed knives are rare. The ones found included 3 irregular scraper-knives (very thick flakes with bifacially worked edge); a thin flake knife, irregular in outline; a rectangular and a triangular bifacially retouched flake; and a small ovate biface.

Ground stone is extremely scarce: 2 fragments of thin slate knives; 2 fragments of sawed nephrite or serpentine boulder; 1 fragment of a small rectanguloid nephrite adze blade; 1 chipped and ground disc of green stone, with a small projection or handle at one end; and 2 possibly ground fragments of sandstone or shale.

Finally, several pieces of metal and two fragments of olive-green bottle glass were found, in apparent association with prehistoric artifacts.

The predominance of choppers, the occurrence of large side-notched projectile points, and the scarcity of ground stone would suggest a considerable antiquity for the earliest occupation of the Hills Bar site.

DiRi 10 — The Union Bar Site

The Union Bar site, initially surveyed in 1956 by Dr. C. E. Borden and James Baldwin, is located on the Reserve of the Union Bar Indian Band approximately 3 miles upriver from Hope on the left bank of the Fraser. It extends more than 500 yards along the beach and more than 200 yards inland. Cultural materials were found from approximately 2 to 40 feet above the river level in late July. Two of the four localities distinguished are of particular interest. Locality C consists of several superimposed layers of gravel, apparently eroding out of the base of a cutbank approximately 15 feet high onto a sloping sandy beach nearly at present river level. The occurrence of weathered flakes and choppers in only one of these gravels suggests original association. Near the inland extremity of Locality B, at elevations ranging between 33 and 38.5 feet above the river, a bulldozer cut had exposed cultural material consisting of weathered argillite detritus and choppers. Clearing of a vertical face in this locality revealed seemingly undisturbed culture-bearing deposits extending to a depth of 75 inches below the present surface. Chipping detritus and one scraper were excavated from near the top of a basal stratum of rounded gravel and cobbles. Overlying strata were silts or fine sands, and all of them contained chipping detritus. Two strata were heavily oxidized; they appeared to be separated by a less oxidized layer. Large cedars were growing on this portion of the site, and a fir (?) stump three feet in diameter was observed. Although logging roads have extensively disturbed this area, sufficient deposit remained to permit testing or excavation.

Two projectile points were recovered from DiRi 10. One is a large, percussion-flaked, single-pointed specimen of weathered argillite, irregular in

outline (Plate III, fig. D). The other is a large, side-notched point similar in outline to specimens from the Byrnes site (DhRp 14), but it was formed primarily by the retouching of only the extreme edges of a plano-convex flake of basalt (Plate III, fig. E). Several small tools were collected including 1 knife of point form (Plate III, fig. F); 1 small discoidal scraper (Plate III, fig. C); 1 end-scraper made on an irregular flake (Plate III, fig. A); and 1 small square scraper, retouched on two adjacent sides (Plate III, fig. B).

Heavy tools consist of 6 unifacial choppers with cortex backing: 2 flaked along the short side (IA); 2 along the long side (IB); and 2 on an angle to the major axis, or along a more or less indeterminate axis (IC). One of the first category and one of the last category are distinctly pointed. Two choppers are made on split cobbles, one of which has been flaked on the end (IIA) and the other on the long side (IIB).

Peripherally flaked scrapers (or choppers) consist of 2 steep specimens, extremely irregular in outline (possibly cores), and 2 oblong specimens made on relatively thinner flakes, which might also be classified as small side-choppers made on split cobbles. Two thin cobble spalls have been roughly flaked for one-third to one-half their circumferences. Four choppers or large scrapers are considered too irregular for classification. Unformed specimens include 1 battered hammer on a round, flattened cobble; 11 cores or irregularly flaked nodules; 5 cobble-spall tools; 1 utilized flake; and a quantity of chipping detritus. One complete and two fragmentary slate knives constitute the only evidence of stone grinding at the site; these were somewhat dissociated from the bulk of the cultural material.

In summary, the Union Bar site evidences considerable antiquity and the potentiality of a long stratified sequence.

DiRi 29 — The Mile 34 Site

This site is located on the left bank of the Fraser at Mile 34 on the Canadian National Railway, opposite the southern tip of Strawberry Island and adjacent to a back-eddy in the river. It is situated on a point of land formed of bedrock, rising from approximately 40 to 70 feet above the river and extending to the west. A culture-bearing deposit consisting of a fine, dark orange sand slopes up from the southern end of the site for a distance of 75 yards to the north and for an undetermined distance to the east. Although the railroad has probably cut through the middle of the deposit, Douglas fir is growing on the eastern portion, and undisturbed fill may remain along this slope.

Chipped stone artifacts collected from the sides of the railroad cut include 1 single-pointed, leaf-shaped projectile point, made on a thin flake (Plate II, fig. I); 1 large percussion-flaked oval knife, made of argillite and extremely irregular in outline (Plate II, fig. J); 1 knife or point tip; and 1 small blade-like flake. Seven unifacial choppers with cortex back were recovered: 2 worked on the long side (IB), 4 diagonally (IC), and 1 along one side and one end. One small outside cobble flake is unifacially chipped for three-quarters of its perimeter, and 1 cobble spall appears to have been backed by steep bifacial chipping.

The assemblage further contains 3 irregular side-scrapers; 3 exceedingly crude specimens that might also be classified as side-scrapers; 1 semi-circular flake retouched adjacent to the straight side, apparently to form an end-scraper; 1 (possibly 2) cobble-spall tool(s); 2 utilized flakes; and a quantity of chipping detritus.

Although the sample is small, the absence of ground slate, or polished stone of any variety, might suggest a considerable antiquity for the site. Carbon 14 dates on several samples from Borden's excavations at DjRi 5, Esilao, have indicated the presence of ground slate in the lower Fraser Valley prior to 4,000 years ago (Daugherty 1965, p. 541; Borden, pers. comm.).

DhRp 14 — The Byrnes Site

The Byrnes site is located on the Langley Indian Reserve No. 5, approximately two miles west of Whonock. It consists of a midden 215 feet in length and of undetermined width, buried beneath six feet or more of cemented silt. The midden is composed of a fine sandy silt containing some coarse sand and pebbles ranging from pea- to fist-size or larger. Large iron oxide concretions occur sporadically throughout the site, both in the form of discontinuous bands and of globules. Also evident in the deposit are lump and powder charcoal, shell, and possibly bone fragments. Underlying the midden, at approximately normal high river level, is a yellow-brown clay containing a few small iron concretions. Many deciduous trees are growing on top of the overburden, one out of a cut cedar stump 6 feet in diameter. This site is rapidly eroding during seasonal stages of high water and is in imminent danger of washout from the Fraser and a creek on the west.

The assemblage from the Byrnes site includes a number of points and other small implements (Plates IV, V) in the collection of Mr. Brian Byrnes of Whonock, the discoverer of the site, and a number of choppers and other heavy tools collected during our survey.

The Byrnes Collection contains the following: (a) at least 2 complete and 3 fragmentary shallowly side-notched chipped stone projectile points (Plate IV, figs. A-D) of a large form very similar to specimens obtained from Hills Bar and Union Bar; (b) at least 8 large points with rounded shoulders and broad contracting stems (Plate IV, figs. E-G, J-L); (c) several leaf-shaped points and bipoints (Plate V, figs. A, G-J); and (d) several medium-sized points with rectangular to slightly contracting stems (Plate V, figs. B-F). One stemmed and serrated (Plate V, fig. L) and one oval, blunt-tipped ground slate point (Plate V, fig. K) were examined, but only one small fragment of a thin ground slate knife had been found on the site by Mr. Byrnes. One retouched chalcedony blade was also noted in the collection (Plate V, fig. M).

Our own surface collection includes a number of exceedingly crude specimens. There are several cobbles broken across at a 90-degree angle and concurrently or subsequently battered. These, along with some roughly flaked nodules, a total of eight specimens, are provisionally classified as cores or hammers. Five slightly more regular specimens are considered crude choppers.

Classified unifacial choppers total 9: 3 worked along the short side (IA), 3 along the long side (IB), and 3 diagonally (IC). One of the second group retains an encrustation of the charcoal-filled, iron-oxide cemented matrix. Three unifacial specimens are made on split cobbles, 2 flaked along the long side (IIB), and 1 diagonally. One large bifacial chopper, 2 cobble-spall tools, 1 rough abrasive stone, and some chipping detritus complete the assemblage.

Several surveyed localities produced materials comparable to those from DhRp 14. Large shouldered points have been found in the vicinity of Fort Langley (DhRp 7), which is almost directly across the river from the Byrnes site. One specimen occurred nearby at DhRp 8, the Hope site. In the Chilliwack region, a single example was found at DhRl 9, the Koop site. Points of this variety seem to be rare in the Hope and Yale regions, where several large private collections were examined. Points that might appear transitional in form between these large, shouldered, contracting-stemmed specimens and the more common medium-sized points with rectangular or contracting stems occurred at DgRm 3 (the Arnold site) and DgRl 10 (the Blow site), both in the vicinity of Chilliwack. Somewhat similar examples appeared in the Eayem phase at site DjRi 5 in the Fraser Canyon (Borden, pers. comm.). Most of the specimens listed above were discovered on land slightly elevated above the most recent alluvial plain.

DgRm 1 — The Sumas Mountain Site

Initially surveyed by Kenyon in 1953, site DgRm 1 is located on the northern side of Sumas Mountain, approximately two miles east of Cox Station. According to Duff (1952, p. 23), an old Sumas village was situated at a place now called Devil's Run. However, this may be site DgRm 2, located by Kenyon farther to the east. At DgRm 1, a stratified midden up to 5 feet in depth is exposed for 285 yards along the beach. The midden consists of a medium-brown silt, interbedded with numerous thin bands of charcoal, perhaps indicative of alternating seasonal occupational and flooding. In some localities, it appears that gravel overlies cultural deposit, but both may be displaced. Vegetation on the side is entirely deciduous. No surface evidence of houses was observed. The midden is being extensively eroded by the Fraser River, which has cut a platform parallel to the beach into the lowermost compacted fill. Some undisturbed deposit remains, but proximity to the railroad might make large-scale excavation impossible.

Perhaps only because of the relatively large sample, chipping and grinding of stone seem to have attained a better balance at DgRm 1 than at any of the sites previously described. Of 9 relatively complete chipped projectile points, all but one of which are made of basalt, (a) 4 are stemmed, 2 with relatively broad triangular blades, corner notches, expanding stems, and barbs (in one case barbing is very slight), 2 with corners removed, generally square shoulders, and slightly contracting stems (Plate VI, figs. A-D); (b) 3 are single-tipped and leaf-shaped, the largest with a slight tendency to asymmetric shoulders (Plate VI, figs. G, H, J); and (c) 2 tend to a diamond-shaped outline (Plate VI, figs. E, F). One medial fragment of a parallel-sided chert (?)

point exhibits grinding on both faces as well as on a portion of both edges (Plate VI, fig. I). Additional bifacial specimens include 1 fragment of a large oval or bipointed knife; 6 crudely worked, pointed (?) specimens, some of which may be fragmented knives of point form; 5 approximately rectangular flake knives, worked on one or more sides; and 6 irregular, bifacially retouched flakes.

Unifacial tools consist of 4 irregular flake scrapers, 1 split cobble chipped along the long side and at one end, and 3 peripherally flaked cobble spalls. Particularly characteristic of the site is a series of five small discoidal scrapers, made by peripheral flaking of pebble spalls with curving cortex bases. Two of these are distinctly domed. One other domed specimen of comparable size but without the cortex base, 2 large, irregular specimens, and 10 small split pebbles or pebble flakes may be related to this industry.

Specimens without retouch or purposive flaking include 1 elongated cobble hammerstone, 11 nodules or irregular cores, 7 used flakes, chipping detritus, and some slate detritus. The virtual absence of cobble choppers at this site contrasts it with sites such as DhRp 14.

Ground stone consists of 1 fragment of sawed nephrite; 1 rectangular bar of serpentine (?) that may be part of an adze blade; 1 large sawed serpentine adze blade fragment, rectangular in outline, with a square-cut poll; and 4 abrasive stones, including 1 fragment with a deep, dish-like depression. Ground slate consists of 1 large, thin triangular point fragment; 2 nearly complete specimens and 23 fragments of thin knives (some of which, however, appear to be thicker than average); and 1 small polished fragment of uncertain character.

DhRn 2 — The Patterson Site

Site DhRn 2, initially surveyed by Kenyon, lies on the west shore of Hatzic Lake on the property of Dr. F. P. Patterson, approximately 300 yards north of Draper Creek. Fronting the lake is a mound about 5 feet high, which may be entirely of cultural origin. Midden exposed in the cutbank, 32 inches or more in depth, consists of a dark grey charcoal-filled earth and fire-cracked rock underlain by yellow silt or clay. Vegetation is primarily deciduous trees and plants such as nettle. Although a fruit orchard may have destroyed the western portion of this site, a substantial amount of undisturbed deposit may remain along the lake shore.

Artifacts recovered during our explorations consist only of several fragments of ground slate knives, some chipping detritus, and one abrasive stone. However, Kenyon (1953, p. 28-30, 79) reported large, chipped laurel-leaf blades (points or knives), stone vessels (plain and anthropomorphic), and a stone fishhook. A collection made on this site by Mr. F. R. Bonn of Abbotsford includes 5 broad single-tipped chipped projectile points of basalt, generally with thick lenticular section; 3 points with broad expanding or slightly contracting stems, one of the latter with subdued flaring barbs; and 1 point with a broad stem (?) equal in length to the blade. One of the single-tipped specimens exhibits grinding on both faces, beginning at the butt and continuing for approximately one-third the length of the point. Ground stone specimens include a hat-shaped labret, unusually flat in section, with a

square external flange and an oblong internal flange, and a small cylindrical pendant with incised rings at one end and a perforation at the other.

Specimens collected by Kenyon and Bonn suggest an occupation of approximately Marpole age, which would warrant extensive testing or excavation. Added importance, however, may be attached to this site owing to its context. To the west of the lake shore are suggestions of two terraces that might have been formed at an early time by Hatzic Lake or by a river draining to the south out of Stave Lake. On the lower of these terraces artifacts have been found, including one hand maul fragment donated to the field party by Mr. John Woron. The upper terrace or flat constitutes a ridge rising approximately 200 feet above the lake and coming to a point on the south. One probable and several possible unifacial choppers were found near this point. In addition, Kenyon (1953, p. 30-31, 80) recorded long, chipped laurel-leaf blades from this area comparable to specimens from the Patterson site.

DhRp 11 — The Carruthers Site

Investigation of the lower Fraser from the vicinity of Chilliwack downstream revealed several complexes of sites associated with the numerous sloughs characterizing this part of the river. The large number of sites for the region may be the result of seasonal use, or it may be the result of rapid changes in the channels that required frequent shifts of habitation. Within memory, for example, as substantial a stream as the Chilliwack River has occupied at least three distinct courses, progressing from east to west.

The Carruthers site lies within reach of tidewater in the broad expanse of low, flat land between the North Alouette and Alouette rivers. It consists of a series of mounds extending for approximately 400 yards along a slough tributary of the Alouette River. The cultural deposit, which might be as much as five feet deep, is a dark midden containing pockets of brown ash and an abundance of fire-cracked rock. The site is presently covered with blackberry vines, but there are no large trees. Ditching operations have disturbed a portion of the ground surface.

Artifacts were abundant in several disturbed localities of the site. Ground stone was predominant, although a number of chipped basalt specimens had been found by Mr. William Carruthers, the discoverer of the site. The survey party collected a fairly large quantity of basalt chipping detritus, 1 elongated hammerstone, 1 small irregular flake scraper, 1 utilized flake, 1 weathered rectanguloid flake bifacially chipped along one side, 1 oval knife fragment, 1 small bifacially flaked discoid, and 1 rectanguloid flake bifacially retouched on 3 sides.

Ground stone from DhRp 11 consists of 1 fragment of a thin, probably triangular slate point; 37 fragments of thin slate knives; 1 bit fragment of an asymmetrically ground adze blade; and 13 complete or fragmentary abrasives, ranging widely in size. Two of the last specimens evidence shaping or grinding of the sides as well as the faces.

The abundance of ground slate and abrasives, the scarcity of chipped stone, and specifically the occurrence of a small slate point of a variety

common at the recent village of Musqueam (Borden, pers. comm.) suggest a relatively late date for the Carruthers site. Possibly it represents the Katzie village of *əx^wi'n'sa'anəsaʔl* (Suttles 1955, p. 19), although it appears to be too far upstream. A number of smaller isolated mounds occur in the vicinity of DhRp 11, and one of these, DhRp 9, manifested evidence of structure in the form of post-molds. These sites as a group may constitute a complex similar to (although perhaps more recent than) the one observed in the vicinity of Mount Shannon, Chilliwack.

DjRi 13 — The Mike Victor Site

Consideration of sites in the Fraser Canyon and in the lowland as a single series may be unjustified, although in ethnographic times these regions in many respects constituted a single cultural sub-area. The following three sites would appear to represent typical proto-historic habitation patterns, although tenuous evidence of age differences among them may be seen.

The Mike Victor site, probably Duff's *ke'lelckətəl* (1952, p. 30), is located on the left bank of the Fraser approximately 1,000 feet downriver from Mile 24.1 on the C.N.R. It is situated on a point of land rising to approximately 20 feet above the river and extending downstream into an embayment, the head of which is now partially filled with riprap from the railway. The only pictograph encountered during the survey occurs on the other side of this embayment in association with what may be the remains of a rock shelter. The latter possibility, along with the unusual form of the midden, suggests that this might be the plank house site described by Fraser in 1808 (*ibid.*, p. 47). (Previous to our visit, this site was examined on several occasions by parties from the University of British Columbia.)

The main portion of DjRi 13 is approximately 130 yards long by 100 yards wide and consists of a large rectangular flat enclosed on all sides but the river side by a ridge up to 8 feet high. The uppermost two feet, and possibly much more of this ridge, are formed of a loose, brown, sandy midden containing fire-cracked rock. One positive circular housepit and four other possible house depressions, two of which appear rectangular, were found on the top of the ridge. Extending from the wings of the ridge, or out of the enclosure, are several long mounds that may be the borders of canoe runways into the river. The mounds are formed of piles of rounded cobbles. A large, flat-topped platform made of similar cobbles occurs at the northern extremity of the site.

Vegetation consists of both deciduous and coniferous trees. A number of oak trees are growing in the area, far from their usual environment in the Gulf Islands biotic province, indicating either the presence of unusual soil conditions or the transport of acorns by the Indians (Suttles, pers. comm.).

A fish-drying rack on a high rock northwest of the enclosure described above and a small rain shelter to the east of it are still in use. These structures are associated with the practice of gill-netting presently carried on in the vicinity. A number of other fishing rocks, with associated fish-drying sheds, occur along this portion of the river, mostly on the right bank.

Artifacts were recovered from the slopes of the ridge described above, from the beach, and from among the cobbles constituting the canoe runways. The commonest implement found is the cobble-spall knife or scraper; 26 specimens, ranging widely in size, were collected. Many of these show extensive grinding or battering on the edges, and a few appear to have been purposely retouched. Four are peripherally flaked, and 3 of these approximate the IIC specimens from Hills Bar. The occurrence of these implements on a contemporary fishing site might suggest their use in the cutting or preparation of fish.

In addition, we collected 2 split cobble side-choppers (IIB); 1 thick rectangular scraper or chopper worked along one side; 6 irregular flake scrapers, generally with flaking along the longer side; 1 end-and-side scraper; 1 elongated hammerstone; 9 used flakes; 4 cores; and a large number of unworked flakes, an unusually high proportion of which are of silicate materials. Significantly absent was the complex of choppers found, for example, at Hills Bar.

Two broad, blade-like flakes showing some retouch are contained in the collection from DjRi 13, along with a single diminutive rectangular-stemmed point made on a blade-like flake by primarily unifacial retouch. Eight irregular or fragmentary specimens show some bifacial flaking.

Ground stone consists of 13 fragments of thin slate knives, 3 positive and 2 possible abrasives, and the striking ends of 2 hand mauls.

DjRi 20 — The Kithlalth Site

Prior to the 1963 survey, all of the Kithlalth Indian Reserve was designated as a single site, DjRi 14. Our investigations indicated, however, that at least three settlements could be distinguished. The two major sites are separated by a high ridge south of Lady Franklin Rock and by a considerable length of apparently uninhabited river bank. The upriver village, which might be of somewhat greater antiquity than the others, lies in the extreme northwesterly corner of the Reserve in an embayment on the outer curve, or left bank, of the Fraser River. The overall length of the site is approximately 160 yards, and the maximum width is approximately 50 yards. Twenty-one depressions were counted in the woods at this locality: four were larger than 6 yards in diameter, and the remaining seventeen ranged from 2.5 to 5 yards in diameter. Although dense brush made mapping difficult, these depressions appeared to occur in two somewhat staggered rows. In addition to these features, up to 30 inches of midden, consisting of a grey-brown, very fine sand containing chipping detritus and fire-cracked rock, are exposed for 40 yards along the river bank. The site is heavily wooded with both deciduous and coniferous trees. A conifer stump 70 years of age by ring count was observed on the lip of one of the larger pits. Although the railway may have destroyed a considerable portion of this site, particularly its northern extremity, and although logging may have caused further disturbance, a number of well-preserved housepits remain.

Artifacts obtained from the midden and adjacent beach consist of 5 irregular flake scrapers; 1 very irregular cobble flake, retouched around

approximately three-quarters of its perimeter; 1 irregular chopper or large scraper; 1 rectangular and 1 elongated hammerstone; 2 cobble-spall knives or scrapers; 2 cores; 1 used flake; and a quantity of chipping detritus. One large cobble spall and 3 smaller irregular specimens are bifacially flaked. Ground stone consists of 4 thin slate knife fragments, 3 fragments of polished schist (perhaps abrasives), and 1 fragment of sawed and ground steatite (probably a pipe fragment).

DjRi 14 — The Village of the Bad Rock

This site is tentatively identified with Fraser's "Village of the Bad Rock" and with Duff's *xə'łεł* (1952, p. 32). Although artifacts were not discovered even in approximate context, a historic or proto-historic date is suggested by the following features: (1) the excellent preservation of the housepits, many of which have distinct lips; (2) the proximity of a graveyard that was apparently maintained at least until 1935; and (3) the discovery by Mr. A. C. Milliken, during the cutting of timber on a portion of the site south of the railway tracks, of a preserved log ladder. However, the finding of a few choppers in characteristic reddish matrix near the C.N.R. grade suggests that an early site may also exist in the locality, perhaps an extension of DjRi 7, which lies at the opposite portal of the long tunnel.

DjRi 14 is situated approximately 1,000 feet upstream from the long tunnel east of South Yale railway station. The site consists of 12 large pits (up to 13 yards in diameter) and 11 small ones, extending in several broken lines along the top of a bluff approximately 125 feet above the Fraser River. The northeastern part of the village abuts on a high rock hill. A trail leads over this hill to the vicinity of DjRi 22. The overall dimensions of the village are approximately 200 yards by 60 yards. Vegetation is exceedingly heavy, including both deciduous and coniferous species. A fir (?) stump on the lip of one depression is more than 74 years old by ring count. Logging has undoubtedly destroyed some features in this locality, but many well-preserved pits remain.

Specimens were collected either from the chopper locality on the railway or from the beach. In both cases they were dissociated from the pithouse village.

The occurrence of housepits at some height above the present river level is neither typical nor unique in the region. At site DjRi 23, 2 large pits and about 13 small ones were recorded approximately 150 feet above the level of the Fraser. According to Duff (*ibid.*, p. 32), a village built on top of a hill at Suka (Squeah) Creek was situated so as to avoid attacks and to facilitate hunting. There is some suggestion that high housepit villages may be characteristically recent and that the earliest pits might be confined to lower elevations. One small piece of supporting evidence for this hypothesis is derived from DjRi 6, a site near Hope that yielded abundant chipping detritus but gave little indication of a slate-grinding industry. Several shallow depressions that may be housepits are located there, but the most probable of them has been extensively eroded by the Fraser River.

DjRi 22 — The Lady Franklin Site

Site DjRi 22 is located on the left bank of the Fraser River, opposite the upstream end of Lady Franklin Rock. Two rectangular rock-lined pits occur there, approximately 150 yards inland and 70 feet above the river. These pits are separated from DjRi 14 by a rocky eminence. There is a gill-netting station on the river bank below the pits, and several stone walls possibly built by miners occur a few yards upstream.

The two house depressions range from 28 to 29 feet in length and from 12 to 22 feet in width. They are partially lined with large, angular boulders. Test-pitting nearby revealed a thick humus and litter containing fire-cracked rock and chipping detritus to a depth of at least 10 inches. Vegetation is confined largely to deciduous trees, including one 16 inches in diameter growing from the lip of one of the pits.

A few specimens were collected near the pits. These include 1 fragment of a bifacially retouched basalt implement, 4 pieces of chipping detritus, the fragment of a possible milling stone, and the mouth of a thick, green, glass bottle. Several tin objects, perhaps only a few years old, were observed on the site. On the beach a short distance upstream from the pits we found 2 elongated cobble hammerstones, 3 cobble-spall knives or scrapers, 1 large flake knife, 1 triangular flake scraper with the edge on the longer side, 1 utilized flake, 1 thin ground slate knife fragment, and 1 small fragment of polished nephrite.

DjRi 22 may have been a mining or railroad camp. It was apparently established on a pre-existing aboriginal site.

Interpretations and Conclusions

Some problems of the origins of Northwest Coast culture in the lower Fraser River area have been examined by Borden (1962, p. 15-17), who has suggested the probability of stimulus from the old world and of entry through the interior of North America for diagnostic traditions such as slate grinding and the manufacture of adze blades and microblades. From a different perspective, Cressman perceives important influences, perhaps migration-borne, stemming at an early time from the Great Basin to result in the progressive infiltration of more northerly and westerly regions (Cressman and others 1960, p. 73-4).

Such broader perspectives, with emphasis on historical processes and extra-regional influences, should be supplemented by the further close investigation of selected regional patterns, particularly with regard to the relationship of specific environments and cultures. On the basis of the 1963 survey of the lower Fraser, within the limited framework stated above, and in the light of working hypotheses set out at the beginning of this report, several tentative conclusions are offered.

Manifestations of an early tradition or set of traditions occur widely in the lower Fraser regions. Diagnostic traits seem to be the predominance of generally unifacial cobble choppers or scrapers of large size and sometimes the presence of large chipped leaf-shaped points, bipoints, or knives. These implements are often heavily weathered, apparently along with their character-

istically oxidized silt or sand matrix. Such artifact traits as the above persist into relatively late sites, but in company with the products of a variety of more elaborate stone technologies. The significant criterion, then, apart from the frequently differing context, is the absence of these newer techniques, such as slate grinding, in assemblages of fairly large size. These apparently early manifestations may have been associated with physiographic, climatic, and biotic conditions, such as the height of sea-level and the density of forestation, which differ substantially from those of the present. Important differences probably exist between various of these assemblages. However, a number of them may be viewed in terms of broadly contemporaneous or loosely related traditions distributed over much of western North America. For example, assemblages closely analogous in both form and context appear in a number of California sites or complexes, such as Farmington, San Dieguito, and Topanga (Treganza 1952; Treganza and Malamud 1950; Treganza and Bierman 1958; Warren and True 1961).

Long persistence of some of these traditions into environments that failed to preserve cultural remains and stratification may have produced an exaggerated lacuna between the earlier and later sites in the lower Fraser region. The relatively rapid rising of land surfaces and consequent retreating of shorelines at the end of the Pleistocene, combined with the increasing forestation might have been processes ideally suited to preservation of the fairly thin cultural deposits of an 'Early Period.' Some evidence would suggest that some time after 8,000 years ago, these physiographic processes were reversed, with the eustatic rise of sea-level overtaking the isostatic rebound of the land in glaciated regions along the Coast (Fairbridge 1958; Shepard 1963; Duff 1963), and possibly with a decrease in the rate or extent of forestation.

The time gap between dated sites of some 4,000 years that existed in 1963 appeared on the basis of very tenuous evidence to be occupied by several complexes examined in the course of the survey. Subsequently, some corroboration was afforded our hypothesis by the long, stratified, and dated sequence obtained by Borden at site DjRi 5 (Borden 1965, Fig. 3, and pers. comm.). Large, side-notched projectile points, of varieties generally similar to specimens found at sites DjRi 24, DiRi 10, and DhRp 14 on the Fraser, have been tentatively dated in eastern Washington between 6,500 and 4,000 years ago (two carbon 14 dates: Fryxell and Daugherty 1962, p. 16, 26, 28; Greengo, pers. comm.). On the North American scale, dates on such points range in general between 9,000 and 3,000 years ago, with late persistence in some regions, perhaps notably in the Arctic (e.g., Mason and Irwin 1960, p. 47-8; Giddings 1962, p. 37-8). Large, slightly shouldered or broad-stemmed points, which were associated with large side-notched points at DhRp 14 (Byrnes site), may constitute horizon markers of similar importance, but perhaps over a more limited area. These points have been found typically on or near natural prairies in Washington (Bryan 1963, p. 54-5, 88) and British Columbia. This provenience might suggest that they were associated with specialized occupations of some sort, such as the hunting of particular game animals. An extremely tentative hypothesis, however, might link them to temporal stages of sub-climax coastal forestation, when men

were driven into prairie refugia. Such stages might be associated with the Hypsithermal in Washington and southwestern British Columbia (Heusser 1960, p. 138, Tables 5-6).

Despite the discovery at site DjRi 5 of projectile points possibly related to or deriving from those described above and dating between 5490 ± 500 (M-1547) and 4420 ± 160 (M-1544) years ago (Borden 1965, Fig. 3), a transition from the earlier complexes of the Canyon to the earliest dated shell mound cultures of the Delta is not yet clearly defined. 'Chopper' sites in British Columbia, however, appear to occur at least as far west as Agassiz (DhRk 2, the McCallum site), and evidence from Washington State would suggest that they may eventually be found in the uplands bordering the recent Delta (Kidd 1964). South of the border, there are a few possible typological links between inland or 'chopper' sites and present shoreline middens, and these links may appear more clearly also in British Columbia as the littoral uplands continue to be investigated. Furthermore, important centres of maritime specialization, hence transitional phases, may be found in the Gulf Islands and on Vancouver Island, where some evidence of relatively early inland occupation also exists (Donald Abbott, Katherine Capes, Wilson Duff, and Donald Mitchell, pers. comm.). Several sites in the lower Fraser, such as DgRm 1 (Sumas Mountain), DhRn 2 (Patterson site), and possibly DhRl 8 (the Little Mountain site, Chilliwack), bear general resemblances to the dated occupation at Marpole. These sites might provide a datum from which to probe back, in this intermediate area between Canyon and Strait, for evidence of the earliest habitations of distinctively 'Northwest Coast' character.

A 'Late Period' in lower Fraser prehistory might be defined in terms of an approximation in material culture to the ethnographically described culture. Comparisons of this sort are inhibited, of course, by the failure of wood and bone specimens to persist in most parts of the survey area. Examples of worked bone or antler were neither recovered nor even observed in the course of the survey. A characteristic settlement pattern in the Fraser lowland during this period may have been the intensive occupation of deep sloughs paralleling the recent river and close to present sea-level. In this area, rapidly shifting channels may have resulted in fairly large complexes of successively occupied sites. In the Chilliwack region, such sites have yielded a surprising number of hand mauls, adze blades, bowls, and anthropomorphic or zoomorphic carvings, perhaps suggesting a relative permanency of habitation combined with extensive woodworking. Western red cedar favours moist, deep, alluvial silts and clay loams and is tolerant of poorly drained soils (Forest Soils Committee 1957, V, p. 11-12). Elderly residents reported that the lowlands around Chilliwack were heavily forested in the past.

Recommendations

(1) Testing, and probably full-scale excavation, could profitably be undertaken in each of the sites described above. Sites DhRp 14, DiRi 10, DgRm 1, and DhRp 11 are particularly deserving of attention and particularly likely to be destroyed in the near future. Together, these sites should provide a fairly

wide temporal range of archaeological materials. Protective measures, for example designation by the British Columbia Archaeological Sites Advisory Board, should be instituted in some cases:

(2) The 1963 survey, added to a great deal of previous work by Dr. C. E. Borden and his students, has made clear the rich archaeological potential of the lower Fraser. On the basis of our reconnaissance, at least one full season of further intensive survey should be undertaken in each of several more narrowly defined regions.

- a. Yale-Hope region.
- b. Hope-Rosedale region.
- c. Chilliwack, Chilliwack River, and Agassiz region.
- d. Langley region.
- e. Uplands adjacent to the recent Delta.

The Chilliwack region is perhaps particularly deserving of further attention. There is not much detailed information, based on excavation, on the possibly extremely important localities on the Fraser and Columbia rivers between the major falls or Canyon and the Coast.

(3) If possible, a geologist, preferably a Pleistocene specialist, should work with an archaeologist throughout each of the above projects. The need for concurrent geological and archaeological interpretation was evident during the season of 1963.

(4) Charcoal exposures were observed, and samples for dating could readily be collected at sites DgRm 1, DiRj 6, DhRp 14, DhRk 1, and DjRi 17. Unfortunately, no exposures of charcoal or charcoal-filled soils were observed in association with productive sites of the earliest character. The discovery of such samples will provide another worthwhile objective for future investigators in the lower Fraser regions.

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PLATE I

DjRi 24—The Hills Bar site

Chipped stone projectile points and knives

- A Projectile point, large, with shallow side-notches and plano-convex to lenticular cross-section. Basalt.
- B Projectile point fragment, large, with shallow side-notches. Basalt.
- C Projectile point, medium-sized, with contracting stem and weak shoulders. Almost triangular cross-section. Basalt.
- D Projectile point with rectangular stem and square-cut shoulders. Basalt.
- E Knife, with shallow side-notches and plano-convex cross-section. Basalt.
- F Knife, oval to bipointed. Argillite, with light grey patination.
- G Projectile point, broad, basally notched, and slightly barbed. Thin, plano-convex cross-section. Base has been re-worked. Argillite with thick brown patination.
- H Projectile point fragment, small, with asymmetric side-notches, and thin plano-convex cross-section. Basalt.
- I Projectile point or knife fragment, with primarily unifacial working, and almost triangular cross-section. Basalt.
- J Projectile point or knife tip. Basalt.
- K Knife fragment. Argillite.
- L Projectile point or knife fragment, large, with shallow single shoulder. Basalt.
- M Knife fragment, probably from oval or bipointed specimen. Argillite.

Unless specified, cross-section is of medium thickness and generally lenticular form.



A



B



C



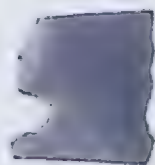
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H



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J



K



M



F

PLATE II

DjRi 24—The Hills Bar site

Chipped stone scrapers and blade-like flakes

- A Side-scraper. Argillite, with thick brown patination.
- B Side-scraper. Basalt.
- C Side-and-end scraper. Basalt.
- D Side-and-end scraper. Argillite with thick brown patination.
- E Side-scraper, made on a blade-like flake. Basalt.
- F Oval scraper, with steep edge on the small end of the specimen. Basalt, slightly patinated.
- G Side-scraper, with steep edge and keel. Jasper.
- H Microblades? Possible specimens recovered from test on Terrace 1. Chert (?), basalt, chalcedony.

DiRi 29—The Mile 34 site

Chipped stone artifacts

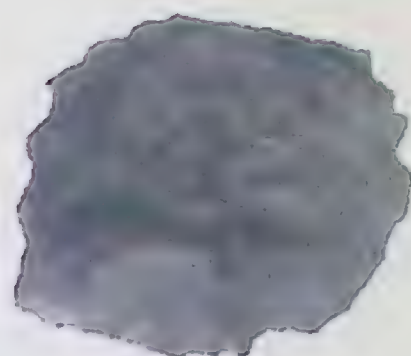
- I Projectile point of leaf-shape, very thin in cross-section.
- J Oval knife or knife blank, percussion-flaked, irregular in cross-section. Argillite with light grey patination.



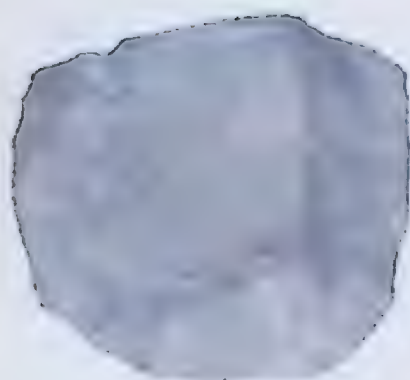
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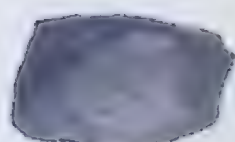
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PLATE III

DiRi 10—The Union Bar site

Chipped stone projectile points, knife, and scrapers

- A End-scraper. Argillite, with thick brown patination.
- B Rectangular scraper, worked on two adjacent sides. Argillite, with thick brown patination.
- C Discoidal scraper. Basalt.
- D Projectile point or knife, large, single-tipped, percussion-flaked. Irregular to lenticular cross-section. Argillite, with thick brown patination.
- E Projectile point, large, side-notched, with plano-convex cross-section. Basalt.
- F Knife, with thin lenticular cross-section. Basalt, with light grey patination.

PLATE III



A



B



C



D



E



F

PLATE IV

DhRp 14—The Byrnes site

Chipped stone projectile points from the Byrnes Collection

- A Projectile point, large, with shallow side-notches and thin, lenticular cross-section. Basalt.
- B Projectile point, of medium size, with shallow side-notches. Cross-section is lenticular, with a tendency to longitudinal ridges on both faces. Basalt.
- C, D Projectile point fragments, side-notched. Basalt.
- E Projectile point, large, with rounded shoulders and broad, contracting stem, rounded at the base. Very thick, lenticular cross-section. Basalt.
- F Projectile point, medium-sized to large, with broad contracting stem, asymmetric shoulders, and lenticular cross-section. Basalt.
- G Projectile point, large, bipointed, with slight tendency to shouldering. Coarse basalt?
- H Projectile point, of medium size, with contracting stem and rounded shoulders. Thin, lenticular cross-section. Basalt.
- I Projectile point or knife fragment, single-shouldered, with thin lenticular cross-section. Basalt, with grey patination.
- J Projectile point, large, with broad contracting stem rounded at the base, and squared shoulders. Cross-section is lenticular. Basalt, with very light patination.
- K Projectile point, large, with broad, contracting stem, rounded at the base, and rounded to squared shoulders. Thick lenticular cross-section. Basalt, with moderately heavy grey patination.
- L Projectile point, large, with broad contracting stem, rounded at the base and rounded shoulders. Cross-section is thick and plano-convex. Basalt, slightly patinated.

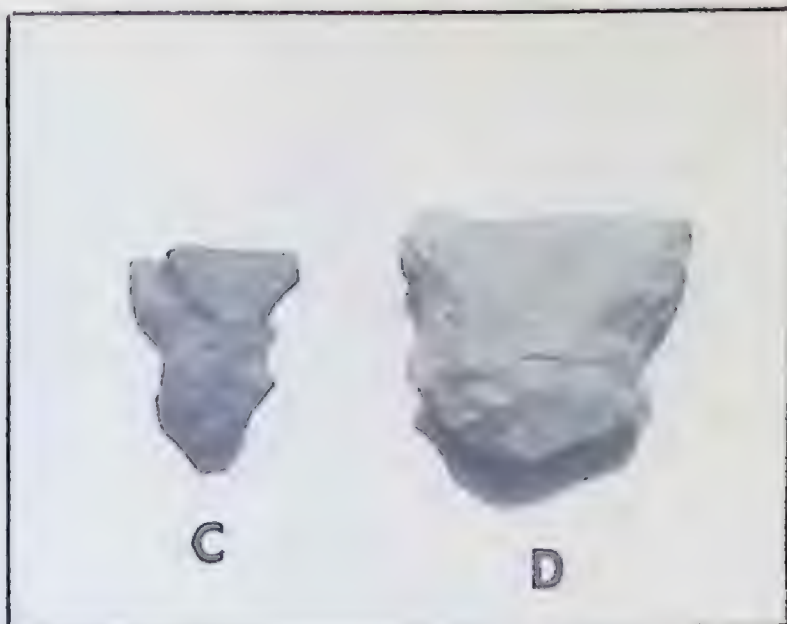
Scale of specimens A, B, E-L: specimen J is approximately 7.4 cm long; scale of specimens C, D: specimen D is approximately 3.4 cm long.



A



B



C

D



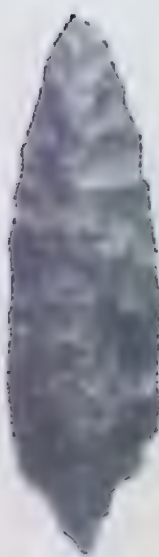
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K



L

PLATE V

DhRp 14—The Byrnes site

Chipped stone projectile points and scrapers, and
ground stone points from the Byrnes Collection

- A Projectile point, bipointed, with slight tendency to shouldering; plano-convex cross-section. Basalt.
- B Projectile point, medium-sized, with corners removed to produce a rectangular to slightly contracting stem, and slight barbs. Cross-section is lenticular. The base of the stem is broken off. Basalt.
- C, D, E Projectile points, medium-sized, with weak, rounded shoulders, contracting stem and lenticular cross-section. May be some fragmentation. Basalt.
- F Projectile point, medium-sized, with contracting stem and rounded shoulders. Cross-section is thick and lenticular to almost diamond shaped. Basalt.
- G Projectile point, slightly fragmented but probably bipointed, with flat, parallel faces. Basalt, with light patination.
- H Projectile point with single tip. Basalt, with light patination.
- I Projectile point with single tip and very thick, ovoid cross-section. Basalt.
- J Projectile point, large, slightly fragmented but probably bipointed. Cross-section is lenticular. Basalt.
- K Ground stone projectile point ? (blunt), or unidentified object. Slate.
- L Ground stone projectile point fragment, stemmed and serrated. Plano-convex cross-section. Slate.
- M Side-scraper, made on a blade. Chalcedony.
- N Side-scraper. Basalt.

Scale of specimens A-J: specimen J is approximately 8.5 cm in length; scale of specimens K-N: specimen K is approximately 8.4 cm in length.



A



B



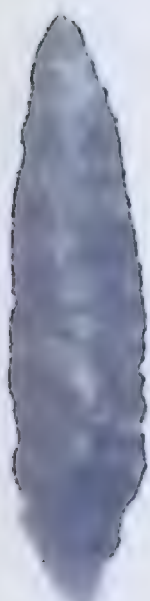
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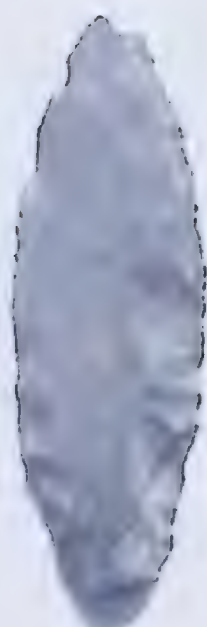
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J



K



L



M



N

PLATE VI

DgRm 1—The Sumas Mountain site

Chipped stone projectile points

- A Projectile point with corner notches, expanding stem, and slight barbs. Argillite.
- B Projectile point with square shoulders and slightly contracting stem. Thin plano-convex cross-section. Basalt.
- C Projectile point with corner notches, expanding stem, and pronounced barbs. Basalt.
- D Projectile point with corners removed to form relatively shallow, square-cut shoulders. Stem is rectangular to slightly contracting and rounded at the base. Basalt.
- E, F Projectile point fragments, with tendency to diamond-shaped outline, and thick diamond cross-section. Basalt.
- G, H Projectile points of leaf-shape, with single tip. Basalt.
- I Projectile point medial fragment, with grinding on both faces and portions of both edges. Chert (?).
- J Projectile point or knife, large, single-tipped and slightly shouldered. Basalt.

Unless specified, cross-section is of medium thickness and generally lenticular form.

PLATE VI



A



B



C



D



E



F



G



I



H



J

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